THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 43, No. 11 | 540 N. Michigan Ave., Chicago 11, Ill. | July, 1944

"He Who Does The Best He Can, Does Enough"

Paying dues is not enough. Attending War Service Conferences is not enough. Officer, committeeman, or just a member of the Association, I have work to do. Not only are the United States, Great Britain, Canada and other countries laying plans on a national scale for rehabilitation, for public health care, for vocational guidance; every state and province is making such plans. My divisional society as well as the American Osteopathic Association, is being asked for, or should offer, its help in surveys and plans. A lot of manpower and womanpower is needed. It is not enough to pay my dues and depend upon the officers to do the rest. There are committee duties pressing, questionnaires to fill out, letters to answer, interviews to conduct.

Only As I Do The Best I Can, Do I Do Enough

Robertson's Hydronephrosis and Pyelitis of Pregnancy

JUST READY!

An Historical Review—To read but a chapter or two of this new book is to recognize immediately that here is a survey of factual, unbiased information that will be consulted for generations to come by those concerned with hydronephrosis and pyelitis of pregnancy. Concise, yet decidedly complete, it is an authoritative account of the important work and findings up to current times on dilatation and infection of the ureters in pregnancy.

Although fudamentally an historical review, it is, by reason of the practical manner in which Dr. Robertson has handled the material, in all reality a rich source of useful information that finds ready application to clinical diagnostic and therapeutic problems.

Anatomic relations of the ureters, eclampsia, ureteral compression and dilatation, the bacteriology of pyelitis, the influence of the nervous system, intravenous urography, uretral reflux, potassium-calcium ratios and vitamins, and end results of hydronephrosis and pyelitis of pregnancy are all taken up. Of special interest are the chapters devoted to Reviews of Textbooks, to Discussion, and to Conclusions. The text is fully annotated and includes a complete bibliography at the end of the book.

By H. E. Robertson, M.D., Section on Pathologic Anatomy, The Mayo Clinic. 332 pages, 5¼"x7¾", illustrated. $4.50.

W. B. SAUNDERS COMPANY — **West Washington Square, Philadelphia 5**

NEW (2ND) EDITION

FUNDAMENTALS OF INTERNAL MEDICINE

by Wallace M. Yater, M.D., F.A.C.P.

Thoroughly edited and extensively revised to bring it up to the minute in respect to all important matters pertaining to internal medicine.

A FEW OF THE SUBJECTS STRESSED:

Primary Atypical Pneumonia, Blood Typing, Hypoproteinemia, Steatorrhea, Liver Function tests, Use of Dicumarol, Sarcoidosis, A preliminary evaluation of the use of Penicillin.

Subjects of interest to the internist in the Armed Forces have been added. These include, among others, medical problems incident to flying, immersion foot, blast injuries, pulmonary effects of chemical warfare, industrial pursuits affecting the lungs, war neuroses and tropical medicine.

THREE ENTIRELY NEW SECTIONS:

"Symptomatic and Supportive Treatment" *"Clinical Values and Useful Tables"* *"The Physician Himself"*

Sections on "Dietetics," "The Ear," "The Eye," and "The Skin" have been retained and enlarged from the First Edition.

Every effort has been made to keep this book practical. The subject matter is concise, theoretic considerations are kept to a minimum, and only valuable and proven therapeutic methods are included. 275 figures, including 1 color plate. Bold face type has been used to emphasize important points.

Diagnostic Tables *Many Photographic Illustrations* *Classifications* *Lists* $10.00 POSTPAID

Cole and Elman's

TEXTBOOK OF GENERAL SURGERY

New (Fourth) Edition *April—1944*

Important advances in surgical knowledge and technics have necessitated the publication of a thoroughly revised edition (4th) in April, 1944, less than three years after publication of the 3rd edition. Included for the first time is a separate chapter entitled "War and Catastrophe Surgery." Many illustrations have been improved or replaced.

1170 pages *955 illustrations* $10.00 POSTPAID

1st Edition, Revised *Published April 24, 1944*

CLINICAL DIAGNOSIS BY LABORATORY EXAMINATIONS

by John A. Kolmer, M.D., F.A.C.P.

Philadelphia, Pa.

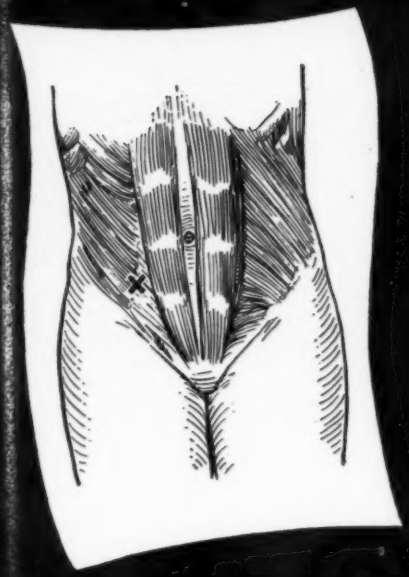
The new and thoroughly modern textbook based on present day laboratory methods in Clinical Pathology with

634 Pages of Clinical Interpretations
328 Pages of Practical Applications
134 Pages of Office Laboratory Methods
137 Time-Saving Diagnostic Summaries
182 Critically Selected Illustrations

1260 pages *182 illustrations* $10.00 POSTPAID

FOR SALE AT BOOKSTORES OR

D. APPLETON-CENTURY CO., INC. **35 W. 32nd ST., N. Y. 1**



SURGICAL ANATOMY

and Adhesive Strapping

● **A primary use of adhesive plaster is to pull tissues into place and hold them.** ***In all strappings the first strips should be applied parallel with the fibres of the underlying muscle, fascia, tendon or ligament, for good anchorage. Subsequent strips are applied in logical directions.***

The technique illustrated utilizes three layers of "ZO" Adhesive Plaster to splint the external and internal oblique and the transversalis muscles in the treatment of a tear or strain of the anterior abdominal wall.

Johnson & Johnson

RED CROSS "ZO" ADHESIVE PLASTER

ORDER FROM YOUR DEALER

CONTENTS, JULY, 1944

ORIGINAL ARTICLES—
Lumbar Mechanics. C. G. Beckwith, D.O., Hudson, N. Y. 491
Proceedings of the Fourth Annual Meeting of the Osteopathic Academy of Orthopedists:
The Orthopedic Examination. Harold E. Clybourne, D.O., Columbus, Ohio 495
Symposium on Problems of the Low-Back Region — Presentations by Robert F. Haas, D.O., Dayton, Ohio; Theodore C. Hobbs, D.O., Columbus, Ohio; R. C. Kistler, D.O., Wyandotte, Mich.; and J. A. Stinson, D.O., St. Petersburg, Fla. 498
Painful Conditions of the Shoulder, with a Discussion of Chronic Adhesive Subacromial Bursitis (Frozen Shoulder). H. N. Tospon, D.O., St. Joseph, Mo. 506
The Treatment of Fractures of the Humerus by Means of the "Hanging Cast." Harold E. Clybourne, D.O., Columbus, Ohio 509
The Use of the Navy Traction Apparatus in the Reduction of Fractures About the Wrist. Harold E. Clybourne, D.O., Columbus, Ohio 510
Evaluation of Hip Fractures. J. Paul Leonard, D.O., Detroit 512
Differential Consideration of the More Common Injuries to the Vertebral Column. Harry F. Schaffer, D.O., Detroit 517
EDITORIALS—
The Time Has Come. Ray G. Hulburt, D.O., Chicago 523
The A.M.A. Versus Sister Kenny. R. E. Duffell, D.O., Chicago 524
Psychobiologic Factors in Poliomyelitis. R. E. Duffell, D.O., Chicago 526
Proceedings of the Osteopathic Academy of Orthopedists 526
OSTEOPATHIC PROGRESS FUND 527
DEPARTMENT OF PROFESSIONAL AFFAIRS—
Bureau of Professional Education and Colleges 528
Committee on Special Membership Effort 528
DEPARTMENT OF PUBLIC RELATIONS—
International Labor Organization Makes Medical Recommendations 528
Traffic in Opium 529
Quinidine Restricted 529
DIAGNOSIS AND TREATMENT—
Appendicitis in Infants and Children. A. G. Reed, D.O., Tulsa, Okla. 530
CASE HISTORY—
Pneumonia Complicated by Tuberculosis. Dorothy Connet, D.O., Kansas City, Mo. 531
CURRENT MEDICAL LITERATURE 534
COMMUNICATIONS—
Emphasizing Distinctive Osteopathy. Asa Willard, D.O., Missoula, Mont. 535
Editor's Comments. Ray G. Hulburt, D.O., Chicago 536
BOOK NOTICES 536
STATE BOARDS 537
MEETINGS 537
DIVISIONAL SOCIETY PRESIDENTS AND SECRETARIES 540

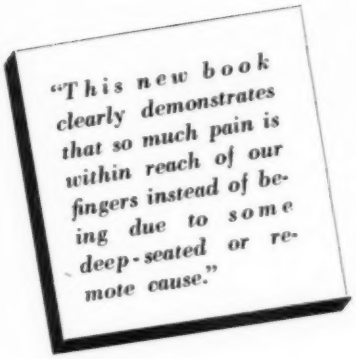
SUBJECT INDEX

Amebiasis, [Faust] 534-CML
American Osteopathic Association:
divisional society presidents and secretaries 540
Anomalies and peripheral nerve changes, [Moore] 522-Ab
Appendicitis in infants and children, [Reed] 530-DT
Becker, Katherine:
Current medical literature 534-CML
Beckwith, C. G.:
Lumbar mechanics 491*
Book Notices:
The Permeability of Natural Membranes. Hugh Davson and James Frederic Danielli 536
Applied Anatomy of the Head and Neck. Harry H. Shapiro 537
Rose's Foundations of Nutrition. Grace MacLeod ..... ad. p. 29
The 1943 Year Book of Industrial and Orthopedic Surgery. Edited by Charles F. Painter ..... ad p. 30
Sulfonamide Therapy in Medical Practice. Frederick C. Smith ..... ad p. 30
Human Constitution in Clinical Medicine. George Draper *et al* ..... ad p. 31
Physical Foundations of Radiology. Otto Glasser *et al* ..... ad p. 31
Doctor in the Making. Arthur W. Ham and M. D. Salter ..... ad p. 31
A Textbook of Pathology. Edited by E. T. Bell ..... ad p. 32
The Art and Science of Nutrition. Estelle E. Hawley ..... ad p. 32
Laboratory Methods of the United States Army. James Stevens Simmons and Cleon J. Gentzkow ..... ad p. 32
Manual of the Diseases of the Eye. Charles H. May ..... ad p. 41
Textbook of General Surgery. Warren H. Cole and Robert Elman ..... ad p. 42
Books Received ..... ad p. 29
Bursitis, subacromial, [Tospon] 506*
Case History:
Pneumonia complicated by tuberculosis, [Connet] 531-CH
Children:
appendicitis in, [Reed] 530-DT
pneumonia complicated by tuberculosis, [Connet] 531-CH
Clybourne, H. E.:
The orthopedic examination 495*
The treatment of fractures of the humerus by means of the "hanging cast" 509*
The use of the Navy traction apparatus in the reduction of fractures about the wrist 510*
Colleges: effects of the war upon, [*Education for Victory*] ..... ad p. 33
Colleges, Osteopathic:
Des Moines, changes at 528-Pr.A
Kirksville, new executive vice president 528-Pr.A
Philadelphia, new acting dean 528-Pr.A
Communications, [Willard], [Holloway] 535, 536-C
Connet, Dorothy:
Pneumonia complicated by tuberculosis, ... 531-CH
Dermatome hypalgesia in intervertebral disc injuries, [Keegan] 535-CML
Divisional society presidents and secretaries 540
Duffell, R. E.:
The A.M.A. versus Sister Kenny 524-E
Osteopathic Academy of Orthopedists, proceedings of 526-E
Psychobiologic factors in poliomyelitis 526-E
Fractures:
humerus, treatment by means of "hanging cast," [Clybourne] 509*
hip, evaluation of, [Leonard] 512*
vertebral, [Schaffer] 517*
wrist, reduction with use of Navy traction apparatus [Clybourne] 510*
Frozen shoulder, [Tospon] 506*
Haas, Robert F.:
Report on standing x-ray studies 498*
Hip deformity and pelvifemoral angle, [Salmore] 534-CML
Hobbs, Theodore C.:
X-ray examination in low-back problems 498*
Holloway, James L.:
Comments on the June JOURNAL 536-C
Hulburt, Ray G.:
The time has come (to place osteopathy in the scientific structure), ... 523-E
Comments on Asa Willard's communication 536
Infantile Paralysis: See Poliomyelitis
Intervertebral Disc:
dermatome hypalgesia, [Keegan] 535-CML
differential diagnosis, [Schaffer] 517*
Kistler, Raymond C.:
The posturchek as an aid to diagnosis 502*
Labor organization, international, makes medical recommendations, [Swope] 528-Pu.R
Leonard, J. Paul:
Evaluation of hip fractures 512*
Low-Back Problems:
etiology — report on standing x-ray studies, [Haas] 498*
x-ray examination [Hobbs] 498*
posturchek as an aid to diagnosis, [Kistler] 502*
summary of discussion, [Stinson] 501*
Lumbar mechanics, [Beckwith] 491*
MacCracken, Frank E.:
Report of committee on special membership effort 528-Pr.A
Meetings: 537
Membership:
applications ..... ad p. 39
changes of address ..... ad p. 35
honor roll 528-Pr.A
report of committee on special membership effort 528-Pr.A
National Foundation for Infantile Paralysis, report 529-Ex
Nelson, C. R.:
Applied anatomy of the head and neck, [Shapiro] 537-BN
Nerve changes, peripheral, and anomalies, [Moore] 522-Ab
Opium, traffic in, [Swope] 529-Pu.R
Orthopedics:
examination, [Clybourne] 495*
Osteopathic Academy of Orthopedics, proceedings 495*; 526-E
Osteopathic progress fund 527
Osteopathy, emphasizing distinctive, [Willard] 535-C
editor's comments, [Hulburt] 536-C
Pelvifemoral angle and hip deformity, [Salmore] 534-CML
Pneumonia complicated by tuberculosis, [Connet] 531-CH
Poliomyelitis:
A.M.A. versus Sister Kenny, [Duffell] 524-E
psychobiologic factors in, [Duffell] 526-E
report of National Foundation for Infantile Paralysis 529-Ex
Posturchek as an aid to diagnosis, [Kistler] 502*
Public relations, department of ..... 528-Pu.R.
Quinidine restricted, [Swope] ..... 529-Pu.R.
Radiology: See X-Ray
Reed, A. G.:
Appendicitis in infants and children 530-DT
Schaffer, Harry F.:
Differential consideration of the more common injuries to the vertebral column 517*
Shoulder, painful conditions of, [Tospon] 506*
Spine:
dermatome hypelgesia in intervertebral disc injuries, [Keegan] 535-CML
differential consideration of the more common injuries to the vertebral column, [Schaffer] 517*
low-back problems, symposium on, [Haas, Hobbs, Kistler and Stinson] 498*
lumbar mechanics, [Beckwith] 491*
orthopedic examination, [Clybourne] 495*
State Boards:
Ala., Ariz., Ark., Colo., Kans., Ky., Mich., Minn., Neb., N. H., N. M., N. Y., Puerto Rico, R. I., S. C., S. D., Wis., Wyo., Alberta 537-SB
Stinson, J. A.:
Summary of discussion on low-back problems 501*
Strong, Leonard J., Jr.:
The permeability of natural membranes, [Davson and Danielli] 536-BN
Swope, C. D.:
Department of public relations 528-Pu.R
Tospon, H. N.:
Painful conditions of the shoulder, with a discussion of chronic adhesive subacromial bursitis 506*
Tuberculosis:
case of pneumonia complicated by, [Connet] 531-CH
unequal leg length following, [Gill] 534-CML
Willard, Asa:
Emphasizing distinctive osteopathy 535-C
X-Ray:
examination in low-back problems, [Hobbs] 498*
report on standing x-ray studies, [Haas] 498*
summary of discussion of low-back problems, [Stinson] 501*

Published monthly by the American Osteopathic Association. Office of Publication, 100 S. Kenilworth Ave., Oak Park, Ill. Address all communications to the Main Office at 540 North Michigan Ave., Chicago 11, Ill. Subscription $10 a year. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 31, 1922. Entered at the Oak Park, Ill., post office as second class matter, April 1, 1926, under the Act of March 3, 1879.

A New Book *A New Approach*

SEGMENTAL NEURALGIA IN PAINFUL SYNDROMES


"This new book clearly demonstrates that so much pain is within reach of our fingers instead of being due to some deep-seated or remote cause."

This new work is based upon the fact that clinically, the combination of segmental pain and tenderness usually is due to factors which irritate roots, ganglia or trunks of the spinal sensory nerves, and not due to painful impulses originating in diseased viscera. The authors emphasize that the various forms of therapy should be applied to the source of pain and not to areas of referred pain where treatment is of little value.

The clear text and many illustrations show exactly how the interpretation of pain can be greatly facilitated by eliciting tender skin zones which accompany the pain and that the presence of tenderness and its distribution, whether local or segmental, is of great aid in diagnosis and therapy.

In describing segmental pain and tenderness, their symptoms and treatment, the authors are not presenting a new disease entity, but rather a symptom complex due to toxic absorption, poor posture, trauma, arthritis of the spine, malignant metastases and other contributing factors. They discuss common painful conditions, not from the viewpoint of theory or pathways involved, but entirely for the practical purpose of diagnosis and treatment which they give in exact detail.

Just how to examine the patient, the methods of eliciting tenderness, the various forms of therapy employed and how and where to apply them are so clearly described and illustrated that every physician can readily adapt them to his own methods, and with great benefit to his suffering patients.

By *Bernard Judovich, B.S., M.D.*, Instructor in Neurology, Graduate School of Medicine, University of Pennsylvania; Chief of Neuralgia Clinics, Graduate Hospital, Women's Medical College Hospital and Philadelphia General Hospital, and *William Bates, B.S., M.D., F.A.C.S.*, F.I.C.S., Professor of Surgery, Graduate School of Medicine, University of Penna. Foreword by Joseph Yaskin, Professor of Neurology, Graduate School of Medicine, University of Penna.

329 Pages 178 Illustrations $5.00

THE ROMANCE OF MEDICINE

NEW Here is a fascinating account of the early development of medicine. Primitive customs, ancient animistic beliefs, religious practices, folk lore, traditions and historical facts—all with regard to the medical significance hidden in them—graphically illustrate the evolution of medicine from the earliest times.

We have no knowledge of any other work in any language tracing so many modern medical facts and customs to ancient concepts. Dr. Gordon shows that some of our most valuable drugs and remedial measures are the results of preliminary work centuries ago. A book of sound scholarship.

By Benjamin Lee Gordon, M.D.
630 Pages (6½x9¼) 147 Illustrations $5.00

F. A. DAVIS COMPANY
PUBLISHERS
PHILADELPHIA 3
In Canada: The Ryerson Press, Toronto

F. A. DAVIS COMPANY, 1914 Cherry St., Phila. 3

Please send books checked and charge to my account.

☐ Segmental Neuralgia in Painful Syndromes, $5.00

☐ Romance of Medicine 5.00

Name.....

Address.....

CRITICAL ACCIDENT STUDY CONFIRMS THE NEED FOR *Adequate Breakfast*

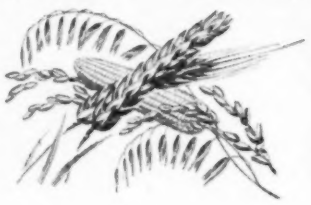
The recommendation, so widely advanced by nutritionists and medical authorities—that breakfast should provide from ¼ to ⅓ of the day's total food intake—gains added substantiation through analysis of 1009 consecutive accidents at an ordnance depot.*

The period, during which these accidents occurred, July 19, 1943 through November 7, 1943, was most favorable from a weather standpoint, since winter tends to increase accident rates. The study was not concerned with the immediate cause of each accident, but rather with predisposing factors.

Four important conclusions were reached: (1) the accident rate for women is lower than for men; (2) it is higher in young persons; (3) the frequency of accidents varies during the course of the work period; (4) the greatest number of accidents occurs between 11 A.M. and 12 noon, the last hour before lunch.

One of the reasons given for this morning peak accident incidence is that little or no breakfast is eaten by the workers. Since work starts at 7 A. M., an average of 6 hours elapses between the skimpy morning meal and the noon meal. During these hours the accident rate rises progressively, reaching peak during the last hour of the morning period. Increasing hunger leads to nervousness, impaired judgment, lessened concentration on the work. Diminishing glycogen reserves hasten the onset of fatigue, an important factor in accident rates.

From this study it may well be concluded that the nutritionally adequate breakfast should prove a valuable adjuvant in lowering accident rates. As a basic breakfast pattern, nutritionists recommend fruit, cereal, milk, bread and butter, providing not only about 600 calories, but notable amounts of all essential nutrients as well. If more is required, this breakfast is easily augmented by the addition of other suitable foods.



*Mann, J.: Analysis of 1009 Consecutive Accident Cases at One Ordnance Depot, Indust. Med. 13:368 (May) 1944.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

CEREAL INSTITUTE, INC.
135 SOUTH LA SALLE STREET • CHICAGO 3

prenatal supports • orthopedic

pendulous supports

visceroptosis and nephroptosis supports

CAMP

FOR PHYSICIANS AND SURGEONS NEW HELPFUL INFORMATION ON ANATOMICALLY DESIGNED SUPPORTS

The supports presented in this thirteenth edition of our Reference Book are the results of thirty years of research and successful experience, in close cooperation with physicians and surgeons. The book contains much new material, with comparative illustrations, showing how Camp Scientific Supports can aid the therapy required in various ailments and figure faults of men, women and children. A copy will be gladly sent to you upon request.

S. H. CAMP & COMPANY, JACKSON, MICHIGAN

Offices in NEW YORK • CHICAGO • WINDSOR, ONT. • LONDON, ENGLAND

World's Largest Manufacturers of Scientific Supports

postoperative supports • hernia

OUR STERILIZER IS ALWAYS *Shiny and Bright*

BRILLIANT chrome plating of Pelton portable exteriors, and cabinet trim, should be preserved by polishing regularly with a soft cloth, preferably flannel.

Baked finish of cabinet models should be rubbed with a good automobile polish on soft cheesecloth. Cabinet tops are in fused porcelain. Clean them as you would clean fine bathroom equipment.

THE PELTON & CRANE CO., Detroit 2
Established 1900

PELTON *Sterilizers*

ARMY E NAVY

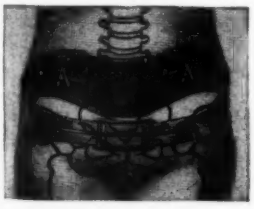
FREE ON REQUEST — Illustrated booklet "Precision Technique," with suggestions for sterilizer and instrument care.

Many Osteopathic Doctors State That

SPENCER SUPPORTS cooperating with MANIPULATION Further Their Treatment

Have You Patients with Any of These Conditions?

Spencer Support designed for this woman to relieve sacroiliac disturbance. The simple belt and pad pictured in inset is concealed under the support, adjustable from outside. The belt binds pelvic girdle tightly holding pad firmly on sacrum. This, together with outer support, effect immobilization of sacroiliac joints. (See shadow-graph below.)



RUPTURED DISC: A Spencer Support is created to provide rigidity, when desired. Each Spencer Support is designed to meet the needs of the patient who is to wear it.

PAIN IN LUMBAR REGION: Lumbosacral or sacroiliac disturbances are relieved by a Spencer designed especially for the patient. When doctor desires to inhibit movement of a part, a Spencer is designed to immobilize that part.

VISCEROPTOSIS: The posture improvement and elevation of abdominal muscles and organs provided by a Spencer Support aid the doctor's treatment to restore muscle tonus.

NEPHROPTOSIS: A Spencer Support designed to support abdomen, improve posture and hold kidney in position favorable to treatment is often remarkably successful.

BREAST PROBLEMS: A Spencer Breast Support holds even heaviest ptosed breasts in healthful position. Improves circulation, thus aiding in improving tone. Releases strain on muscles and ligaments of chest, neck, shoulders, and upper back.

PRENATAL, POSTPARTUM: By gripping pelvic girdle snugly, Spencer Supports protect against disturbances in body mechanics. The abdominal support and posture-improvement effected by a Spencer aid general body-functioning.

INOPERABLE HERNIA: A Spencer Support holds even the heaviest hernia securely—and comfortably. Will not yield under strain or move out of place. Prescribed also as a guard against development of hernia from sudden strain—and following hernia operation.

Spencers are never sold in stores. For a Spencer Specialist, look in telephone book under "Spencer Corsetiere" or write direct to us.

Spencer Spinal Support designed for this man to effect rigidity.

Spencer Abdominal Support designed for this woman as aid to treatment of Visceroptosis.

MAY WE SEND YOU BOOKLET?

SPENCER *INDIVIDUALLY DESIGNED*

Abdominal, Back and Breast Supports

SPENCER INCORPORATED,
129 Derby Ave., New Haven 7, Conn.
In Canada: Rock Island, Quebec.
In England: Spencer (Banbury) Ltd., Banbury, Oxon.

Please send me booklet, "How Spencer Supports Aid The Doctor's Treatment."

..... D.O.

Address 7-44

★ ★ ★ ★

NIGHT TREATMENT ★ ★ *Simplified*

By eliminating the need for hot water bottles, electric pads, hot towels, in the treatment of local inflammations, Numotizine not only simplifies the nursing procedure but permits the patient to relax and sleep without interruption.

By stimulating phagocytosis and encouraging lymph drainage, Numotizine affords relief in chest conditions, sprains, bronchitis, glandular swellings, furunculosis, etc.

Supplied in 4, 8, 15 and 30-ounce resealable glass jars.

Ethically presented — not advertised to the laity.

NUMOTIZINE, Inc.
900 North Franklin Street
Chicago, Illinois

THREE GREAT STORIES

Reprinted from Osteopathic Magazine by urgent request.

1. "War Injuries"
By Stanley H. Page in January O.M.
How osteopathy aids service men's injuries.
Four pages, 6x9 inches. $2.00 per 100.

2. "Dr. Dahl Went to Moscow"
By Ken Turner in December O.M.
A D.O. accompanies Capt. Eddie Rickenbacker to Russia.
Four pages, 6x9 inches. $2.00 per 100.

3. "Osteopathic 'Sick Bay' Cuts Absenteeism"
By Henry Platt, Ph.D. in January O.M.
Officials and doctors explain how an infirmary manned by osteopathic physicians in big war plant cuts time lost from illness by employees.
Six pages, 6x9 inches. $3.00 per 100.

Each folds for small size business envelope. No envelopes supplied. No imprinting. Use rubber stamp. Mails for one and one-half cents unsealed. Samples on request.

American Osteopathic Association
540 N. Michigan Ave. Chicago 11, Ill.

Designed to ASSIST *the* PATIENT

THE "RAMSES"* Diaphragm Introducer, designed after consultation with gynecologists, engages the rim of the "RAMSES" Flexible Cushioned Diaphragm at two points, shaping it into an elongated oval, thus enabling it to pass readily into the vagina. By providing complete control over the direction of travel, the "RAMSES" Diaphragm Introducer assures proper and accurate placement of the diaphragm.

1. The wide, blunt tip of the "RAMSES" Diaphragm Introducer is designed to prevent even the remote chance of accidental penetration of the uterus during insertion of the diaphragm.

2. Made of easily cleansed plastic, the "RAMSES" Diaphragm Introducer has no minute crevices to harbour bacterial growth—no sharp projections to cause possible vaginal injury.

3. The broad, rounded hooked end of the "RAMSES" Diaphragm Introducer—used for diaphragm removal—guards against possible entry into the urethra.

Your patients obtain the "RAMSES" Diaphragm Introducer when you specify the "RAMSES" Physicians Prescription Packet No. 501.

"RAMSES" Gynecological Products are suggested for use under the guidance of a physician only. They are available through recognized pharmacies.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Pharmacy and Chemistry

**The word "RAMSES" is the registered trademark of Julius Schmid, Inc.*

Ramses
TRADE MARK REG. U.S. PAT. OFF.

Gynecological Division
JULIUS SCHMID, INC.
Established 1883
423 West 55 St.
New York 19, N. Y.

DIAPHRAGM INTRODUCER

Before Use of Riasol

After Use of Riasol

Hot Weather and PSORIASIS

Hoped for summer improvement often fails to materialize in psoriasis; 25.5% of cases **fail to improve,** while 14.3% are actually **rendered worse.**

RIASOL retains its high level of effectiveness in treating stubborn summer psoriasis. Despondent patients find new mental assurance with the clearing of ugly, blemished areas. Protracted freedom from recurrences is a common RIASOL experience.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol. More massive, but **less effective,** inorganic preparations contain 35 times more mercury; RIASOL'S inherent safety factor is thus self-evident.

PATIENT cooperation is assured through RIASOL'S non-staining, washable vehicle. No odor attends the use of RIASOL'S **invisible, economical** thin film.

Apply RIASOL daily, after a mild soap bath and thorough drying. After one week, adjust to the patient's progress.

RIASOL is not advertised to the laity. It is available in 4 oz. and 8 oz. bottles.

Generous clinical package on request.

RIASOL may be applied to any part of the body, including face and scalp.

Mail this coupon today and try RIASOL on your next psoriatic case.

SHIELD LABORATORIES AOA-7
8751 Grand River Ave., Detroit 4, Mich.

Please send me professional literature and generous testing supply of RIASOL.

..... D. O. .....Street

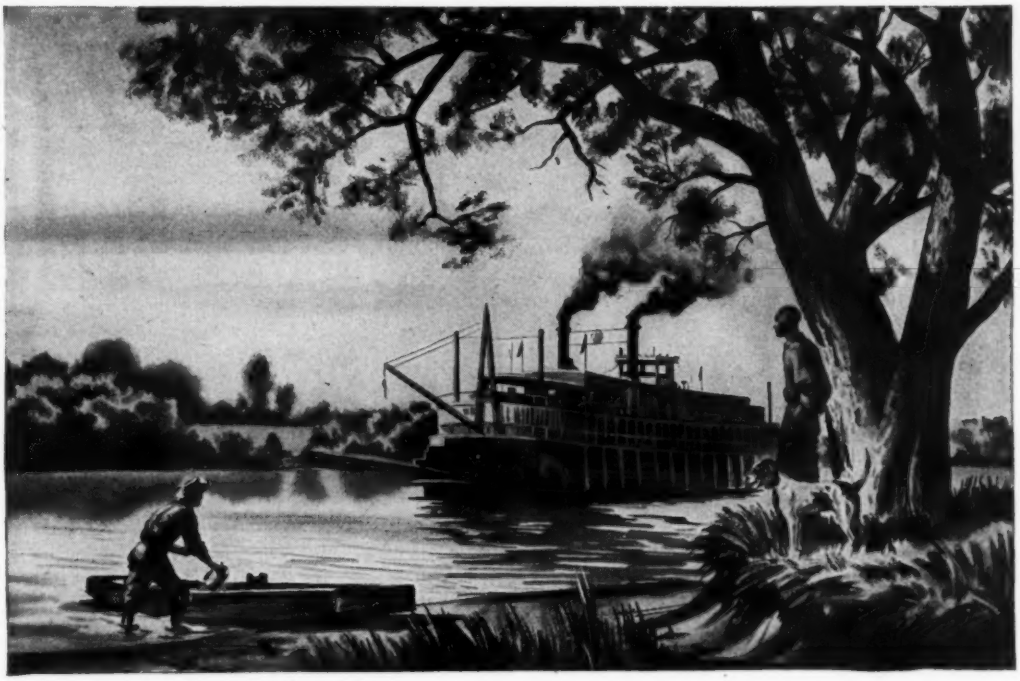
City..... Zone..... State.....

Druggist..... Address.....

RIASOL for PSORIASIS

THE MISSISSIPPI RIVER PROVES THE POTENCY OF

Liquid Bulk



FLOWING through the Mississippi Valley, "Old Man River" carries along over a million tons of waste every day, depositing it into the Gulf of Mexico.

Similarly, in the intestinal tract, there is no more efficient method of flushing away waste than by the use of *liquid bulk*—as formed by Sal Hepatica plus water.

Clinical and laboratory tests prove that:

★ in the isolated loop of a dog's ileum, a laxative solution of Sal Hepatica increased the liquid bulk by 34 per cent in one hour.

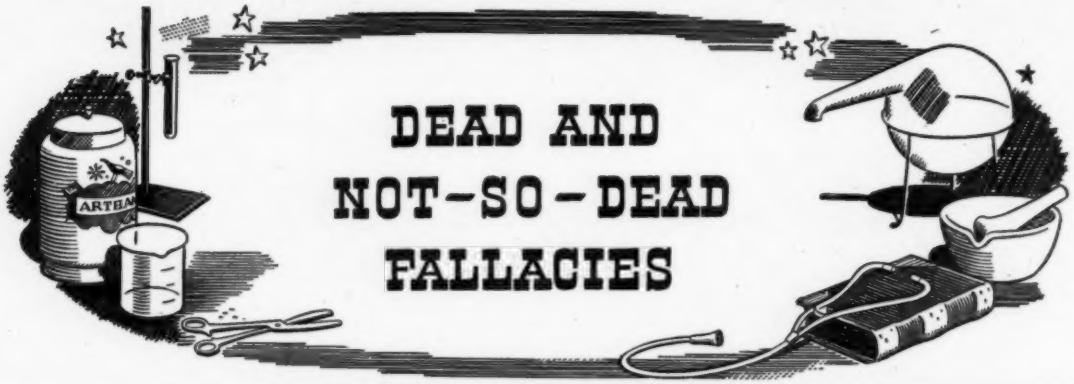
★ in thistle tube experiments, a Sal Hepatica solution increased the liquid bulk by 100 per cent within 6 to 12 hours.

★ Sal Hepatica's liquid bulk helps stimulate bowel muscles, maintain a proper water balance. And the salines of Sal Hepatica relieve gastric acidity, help promote the flow of bile.

Bristol-Meyers Company, 19HH West 50th St., New York 20, N. Y.

TO HELP FLUSH THE INTESTINAL TRACT

Sal Hepatica SUPPLIES Liquid Bulk!



NEWBORN BABIES should be salted all over, have their heads bandaged to shape them, and be kept in tight swaddling clothes for several months. This 15th century conception of pediatrics died a long time ago.

A CAN OF FOOD should be emptied immediately into a crockery container after opening, otherwise it becomes poisonous. This belief still persists in the enlightened year of 1944 among uninformed laymen. You may even have heard it in your practice.

As you know, the second belief is as fallacious as the first.

According to a release of the U. S. Department of Agriculture, "It is just as safe to keep canned food in the can it comes in as it is to empty the food into another container. The principal precautions for keeping food are—keep it cool and keep it covered."

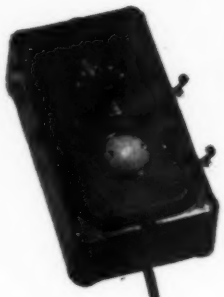
FOR VICTORY, BUY AND HOLD WAR BONDS

CANCO

AMERICAN CAN COMPANY

230 PARK AVENUE · NEW YORK 17, NEW YORK

YOU CAN FIND TIME, TOO
Simplify office procedure with a HYFRECATOR



Send for FREE booklet "Symposium on Electrodesiccation" showing many uses of Electrodesiccation current, with illustrations.

***The* BIRTCHER HYFRECATOR** is a compact, Electrodesiccation unit that can save you as much as 20 minutes a day. That adds up to two extra half-days a month . . . to use as you please.

***The* HYFRECATOR** enables you to treat scores of cases with Electrodesiccation . . . get more done, in less time. It's easy to use, one simple operation does the trick. No before and after treatment required. Women are delighted with the excellent cosmetic results. Removes warts, moles, polyps, etc., without noticeable scars or blemishes. Hangs on your office wall, ready to use. $37.50 complete.

The BIRTCHER CORPORATION

5087 HUNTINGTON DRIVE • LOS ANGELES 32

Birtcher

FROM THE FILES OF BUSY PHYSICIANS

PROTECTED BY UNITED STATES PROCESS PATENT — CEREAL LACTIC

CASE HISTORY No. 1468

HEADACHES, STOMACH SORENESS AND DISTENTION RELIEVED

Patient: Mr. B. C. . . . . Age 35.

History: Stomach trouble began four years ago; about four months ago began having headaches; feeling of soreness in stomach, stomach distention, tired, constipated.

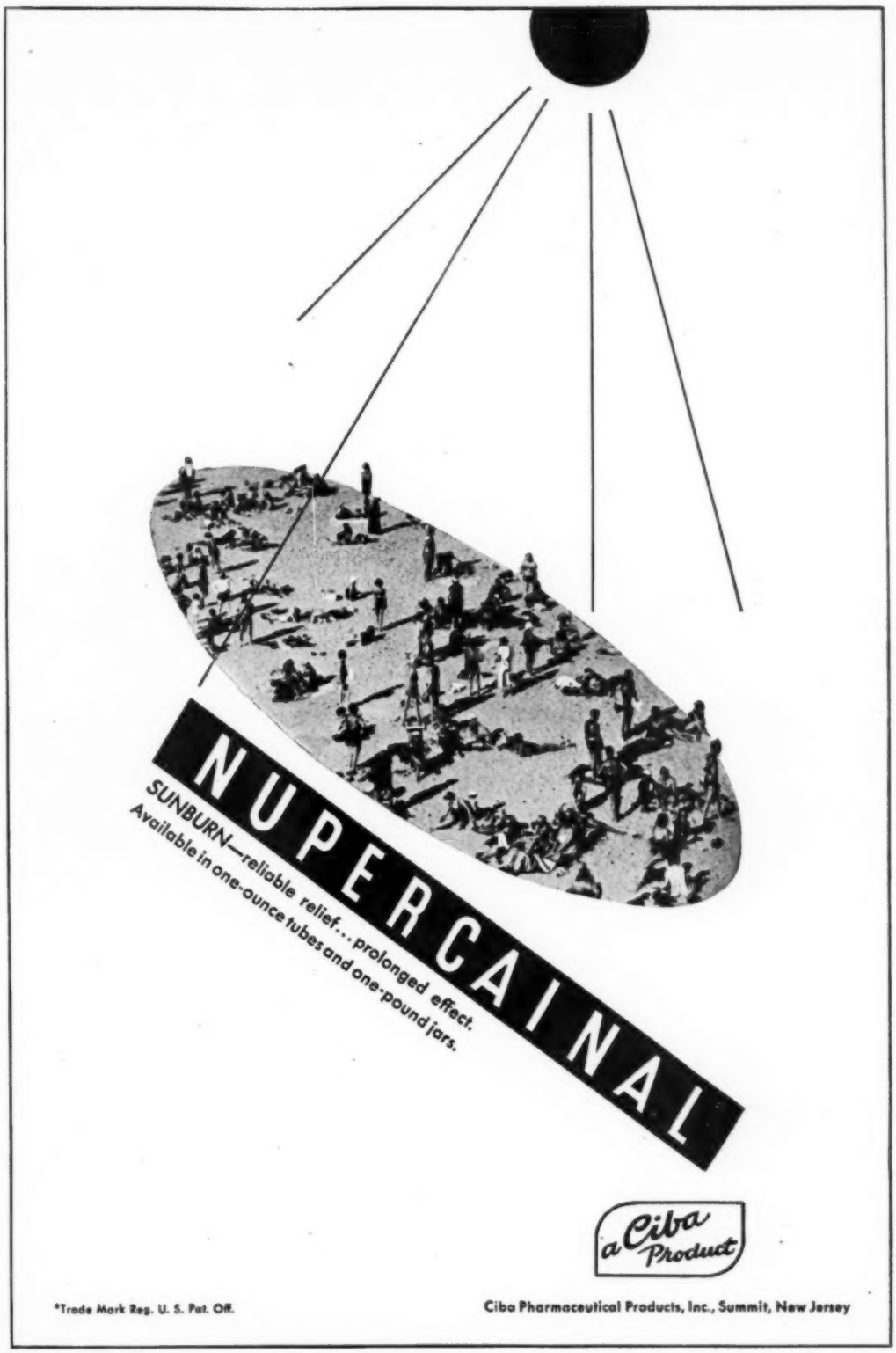
Treatment: Cereal Lactic (Improved) Tablets 2 to 4 after meals.

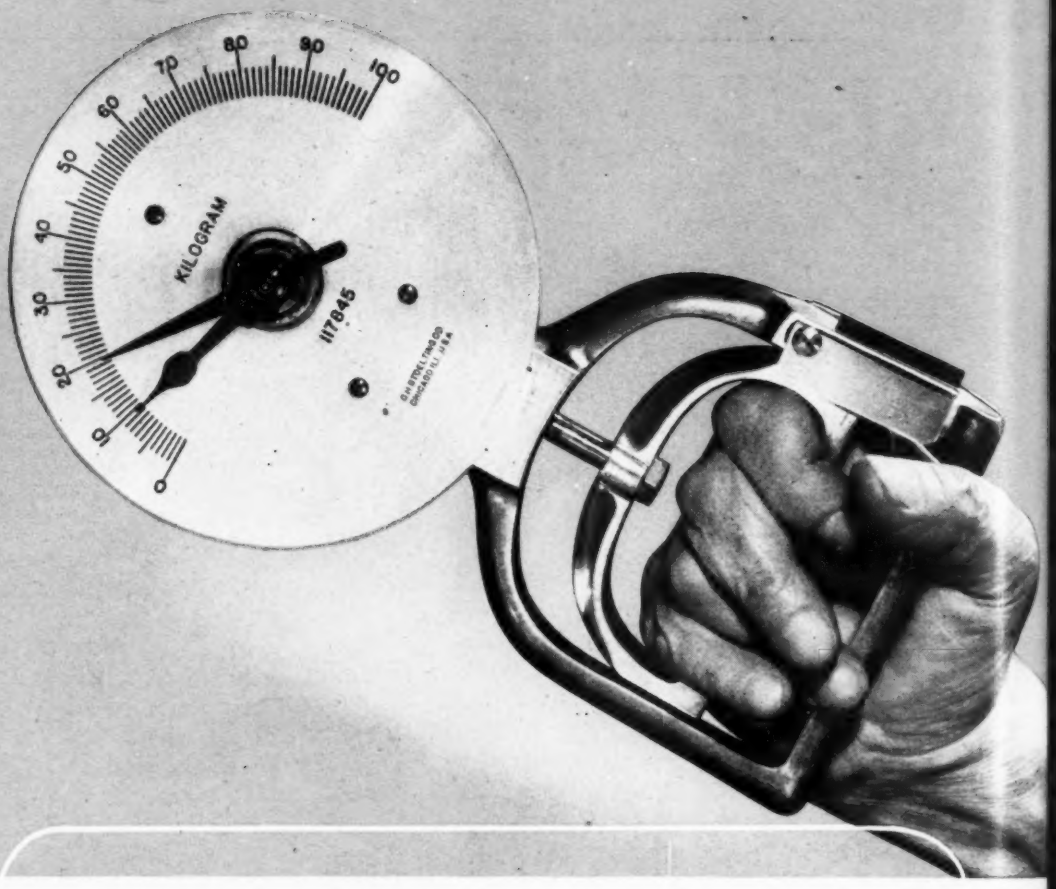
Condition After Treatment: There was an improvement in two days after start of Cereal Lactic Treatment. He takes Cereal Lactic tablets regularly and has no headaches or stomach disturbance and gastric soreness. Eats general diet.

Cereal Lactic

Widely Prescribed by the Profession as an Effective Treatment for Gastro-Intestinal Disorders. Two Forms: IMPROVED and ALKALINIZED.

CEREAL LACTIC COMPANY . Woodward . Iowa


NUPERCAINAL
SUNBURN—reliable relief... prolonged effect.
Available in one-ounce tubes and one-pound jars.
a Ciba Product
*Trade Mark Reg. U. S. Pat. Off.
Ciba Pharmaceutical Products, Inc., Summit, New Jersey



Measuring Results in Arthritis Therapy

The Grip Dynamometer is employed routinely as a measure of muscular function. One of the earliest signs of response to Ertron therapy is an increased strength of muscular activity.

The measure of effectiveness of anti-arthritic medication includes an appraisal of its effect on systems other than the articulatory system.

Thus, such responses as increased appetite measured by weight gain, and improved muscular action measured by ability to grip or lift, are evidence of systemic therapy in a systemic disease.

ERTRONIZE THE ARTHRITIC

To *Ertronize* the arthritic patient, employ ERTRON in adequate dosage over a sufficiently long period to produce beneficial results. Gradually increase the dosage to the toleration level. Maintain this dosage until maximum improvement occurs.

Ertronize early and adequately for best results.

ERTRON* alone—and no other product—contains electrically activated, vaporized ergosterol (Whittier Process).

Supplied in bottles of 100 and 500 capsules.

ETHICALLY PROMOTED

NUTRITION RESEARCH LABORATORIES

•

CHICAGO

*Reg. U. S. Pat. Off.

ERTRON PARENTERAL

For the physician who wishes to reinforce the routine oral administration of Ertron by parenteral injections, Ertron Parenteral is available in packages of six 1 cc. ampules. Each ampule contains 500,000 U.S.P. units of electrically activated, vaporized ergosterol (Whittier Process).

ERTRON

Completely Efficient in Spermicidal Activity

• Five accredited vaginal jellies were tested recently under strict laboratory control . . . In 3 sets of "mixing" tests, using 1 part jelly with 2 or 3 parts saline and 50% semen, *Lygel Vaginal Jelly* was found to be completely efficient in spermicidal activity. In "contact" tests, spermatozoa were immobilized *on contact* . . . even when diluted with an equal volume of saline.

The detailed reports of the tests mentioned are available to you on request.

The *Lygel* contraceptive method (using patented applicator) was prescribed for several hundred patients of a well-known Birth Control Center. *Lygel Vaginal Jelly* proved effective, both with and without any mechanical barrier.

Lygel Vaginal Jelly is available in slip-label packaging for ethical dispensing and is promoted through the medical profession.

LEHN & FINK PRODUCTS CORP.
Distributor
Professional Division
683 Fifth Avenue, New York 22, N. Y.

ACTIVE INGREDIENTS
p-Chloro-symm.m-dimethyl-hydroxybenzene p-tert. Amylhydroxybenzene and Lactic Acid in a Vegetable Jelly.
Protected by U. S. and Foreign Patents
LYGEL
VAGINAL JELLY

"Lygel" Reg. U. S. Pat. Off. Copyright, 1944, by Lehn & Fink Products Corp.

Osteopathic Briefs

4 pages. Size 6x9

Order by number or title.

Make up an assortment to suit.

NO.	TITLES
1	Osteopathic School of Practice
2	Influenza
3	Pneumonia
4	Sciatica
5	Acute Infectious Diseases
6	Strains and Sprains
7	Periodic Health Examinations
8	Nervous Diseases
9	Osteopathy in Athletics
10	Backache
11	Osteopathy in Obstetrics
12	Chronic Arthritis
13	Proctology
14	Osteopathy for the Feet
15	Diseases of Women
16	Friendly Fever
17	Modern Treatment of Hernia
18	The Acutely Sick Child
19	Why Osteopathic Hospitals— —Howard E. Lamb, D.O.
20	Osteopathy in the News —Wm. Randolph Hearst
21	What Osteopathy Is and Is Not —Ray G. Hulburt, D.O.
22	If I Need Relaxation —Mark Sullivan

Prices: $1.75 per 100. $15.00 per 1,000. Set of samples, 25 cents. Imprinting professional card: Under 1,000, 50 cents per 100; 1,000 and over, 25 cents per 100. Original plate set-up—75 cents. Change in set-up—75 cents each time.

The American Osteopathic Association,
540 N. Michigan Ave., Chicago

Date.....

Please enter my order for.....**copies of Osteopathic Briefs, as follows:**

No. 1.....	No. 12.....
No. 2.....	No. 13.....
No. 3.....	No. 14.....
No. 4.....	No. 15.....
No. 5.....	No. 16.....
No. 6.....	No. 17.....
No. 7.....	No. 18.....
No. 8.....	No. 19.....
No. 9.....	No. 20.....
No. 10.....	No. 21.....
No. 11.....	No. 22.....

With ☐ or without ☐ professional card

Name.....

Address.....

BABY IS ONE YEAR OLD TODAY!

He has begun to take a wider variety of foods, but fundamental, as his "staff of life," is his daily milk quota.

Because of low curd tension, ease of digestion and palatability, he will delight in taking his milk ration in the form of Horlick's.

Horlick's prepared with milk is rich in muscle-and tissue-building proteins, as well as bone- and tooth-building calcium. Horlick's Fortified is reinforced with additional amounts of vitamins A, B_1, D and G.

Obtainable at all drug stores

Recommend
HORLICK'S

The *Complete* Malted Milk—Not Just a Flavoring for Milk

HORLICK'S

Pinch Yourself—

Then tell another person how it feels, so that that person experiences the same feeling!

Can you do that? Of course not. Because the "feelings" of a nervous organism are on the "un-speakable" level.

That's what we're up against, when we try to tell you of the advantages of FERRIC MUCATE as an adjuvant in nutritional Anemias—WE KNOW THE FACTS—but we haven't gotten them across to you!

The experience in over 20,000 clinical cases where the organic colloidal Iron—FERRIC MUCATE—was used, prompts the statement that, because of a more-normal pH, it is less upsetting to the gastro-intestinal tract, with a relatively high assimilability.

BUT YOU DON'T KNOW THAT . . . . YET!

So send directly to us for a sample of this organic iron (combined in three ways) for substantiation of the above statement.

1. **FERRIC MUCATE with dehydrated vegetables**
2. **FERRIC MUCATE with Liver and normal B Complex**
3. **FERRIC MUCATE with Liver and HIGH B Complex**

professional foods
CEDAR RAPIDS • IOWA

Distributors of

NORMIN — COLCIN — PAN-ENZYMES — FERRIC MUCATE

Drop around to our booth—we'll gladly show you—No HIGH-PRESSURE, just explanation. We want to serve you if we can—and we believe you'll agree that we can effectively.

Diarrhea in Infancy

Take It In Time

Just a day or two of light nourishment prepared from Mellin's Food as suggested below will usually avert an intestinal disturbance that might develop into a serious diarrhea if not taken in hand at the first appearance of loose stools.

Mellin's Food* . . 4 level tablespoonfuls

Water (boiled, then cooled) 16 ounces

Give one to three ounces every hour or two until the stools lessen in number and improve in character.

The mixture may then be strengthened by the gradual substitution of boiled skimmed milk for water until the quantity of skimmed milk is equal to the normal quantity of milk used in the baby's formula. Finally the fat of the milk may be gradually replaced by skimming less and less cream from the milk.

Directions for using Mellin's Food are left entirely to the physician.

Samples sent to physicians upon request.

Mellin's Food Company, Boston, Mass.

**MELLIN'S FOOD: Produced by an infusion of Wheat Flour, Wheat Bran and Malted Barley admixed with Potassium Bicarbonate — consisting essentially of Maltose, Dextrins, Proteins and Mineral Salts.*

IN THE *Progressive* NUTRITIONAL NEEDS OF GESTATION

While it is not strictly true that the gravid woman must "eat for two," nutritional requirements nevertheless are higher during pregnancy. As the fetus increases in size, its nutritional demands increase. In consequence, food consumption must be progressively raised to prevent catabolic breakdown of maternal tissue to satisfy these needs.

Ovaltine proves of real value as an aid in satisfying the greater nutritional needs during pregnancy. This delicious food-drink proves appealing during this period when anorexia may seriously curtail food consumption. It supplies the nutrients especially required for proper fetal growth—minerals, vitamins, and biologically adequate proteins. Prescribed during the second and third trimesters, Ovaltine helps promote a state of optimum nutrition in the mother and optimum development of the fetus.

THE WANDER COMPANY, 360 North Michigan Avenue, Chicago 1, Illinois

Ovaltine

Three daily servings (1½ oz.) of Ovaltine provide:

	Dry Ovaltine	Ovaltine with milk*		Dry Ovaltine	Ovaltine with milk*
PROTEIN	6.0 Gm.	31.2 Gm.	VITAMIN A	1500 I.U.	2953 I.U.
CARBOHYDRATE	30.0 Gm.	62.43 Gm.	VITAMIN D	405 I.U.	480 I.U.
FAT	2.8 Gm.	29.34 Gm.	THIAMINE	.9 mg.	1.296 mg.
CALCIUM	.25 Gm.	1.104 Gm.	RIBOFLAVIN	.25 mg.	1.278 mg.
PHOSPHORUS	.25 Gm.	.903 Gm.	NIACIN	3.0 mg.	5.0 mg.
IRON	10.5 mg.	11.94 mg.	COPPER	.5 mg.	.5 mg.

*Each serving made with 8 oz. of milk; based on average reported values for milk.

WHAT ARE DOING ABOUT HAIR HYGIENE?

NORMAL hair and scalp (as well as many unhealthy conditions) are frequently benefited by proper hair hygiene designed to *cleanse, massage* and *stimulate.*

Parker Herbex preparations—professionally preferred for over fifty years—have been specifically developed for this purpose. Containing only the finest of highly potent, efficacious ingredients, they are skillfully compounded with a minimum of alcohol . . . completely free from chemicals which may "dry" the hair or scalp or cause other injury.

With our compliments, physicians who are not yet familiar with Parker Herbex may obtain (for their personal use) a regular trade package of Herbex Conditioner (No. 3) with atomizer, and Herbex Sulfurated Ointment (formerly Standard Yellow)—both of which are calculated to exert a salutary influence, regardless of hair color or texture.

Valuable data on pathologic affections of hair and scalp have been compiled in a 117-page book "The Hair and Scalp", available exclusively for professional reading.

HERBEX

PREPARATIONS FOR HAIR AND SCALP

AOA-7

PARKER HERBEX CORPORATION
607 Fifth Avenue, New York 17, N. Y.

Glad to take advantage of your offer for free Herbex preparations and professional book.

Dr._____

Address_____

City_____

THE *Allergic*

NASAL SYNDROME

Intense itching-burning discomfort in the nose and throat—the exhaustive sneezing—raw nostrils, profuse discharge—nasal blockage—watery congested eyes—how well you know them.

Seeing this picture, osteopathic physicians rightfully believe a measure of relief with local medication is indicated and welcomed by those so distressed. The next important consideration is to select a reliable medication that relieves, won't injure and one that harmonizes with nasal physiology. PENETRO NOSE DROPS are medicinally balanced to avoid unnecessary congestive reaction and injury to the ciliae or membrane. They are markedly gentle, effective.

Soothing, cooling, vaso-constrictive, PENETRO NOSE DROPS act almost instantaneously to open up nares permitting free breathing, check itching, and profuse discharge. Each package carries cautionary directions. PENETRO NOSE DROPS contain Ephedrine, Menthol, Camphor and Eucalyptol in light mineral oil.

DPS

Leadership
in
Biochemical Formulae

The Dartell Formulation of an

ESTROGENIC INUNCTION

. . . employing every known synergistic factor compatible with the hormone itself in an inunction base compounded for rapid percutaneous assimilation. Each cc contains 5,000 I.U. of natural female sex hormones.

DPS FORMULA 302
30 cc Dropper Bottle
List Price **$8.00**

A Therapeutic Brief covering Estrogenic Inunction therapy will be sent free upon request.

Dartell Laboratories
MANUFACTURING BIOCHEMISTS
1226 SOUTH FLOWER STREET
LOS ANGELES 15, CALIF.

Better Reduce the Ry-Krisp way !

FREE TO DOCTORS! RY-KRISP LOW-CALORIE BOOKLET INCLUDING DIETS, RECIPES, MENUS

You can save valuable consultation time with the New Ry-Krisp Low-Calorie Booklet. It contains diets for normally overweight persons (1200 calories for women, 1800 for men) based on needed protective foods... low-point recipes and menus to make low-calorie meal planning easier for your patients. Prepared for the profession by recognized nutritionist.

RY-KRISP...
Delicious Whole Grain Bread

Good source of thiamin, phosphorus, iron; provides bulk to aid regularity. Made simply of flaked whole rye, salt and water.

Specified as bread in low-calorie diets because it furnishes only 23 calories per slice... in allergy diets because it does not contain wheat, milk or eggs.

use this COUPON for FREE DIETS

Ralston Research Laboratories
40 Checkerboard Square, St. Louis 2, Mo.

Please send, no cost or obligation, new low-calorie diet booklets; also allergy diets with tested recipes.

_____ M. D.

Address _____

City _____ *State* _____

Vocational Guidance Literature

Send to High School and College Students and Libraries

Made up in packets or sold separately. (See below)

***1. OSTEOPATHY AS A PROFESSION**
24 pages. 8 pages of photographs of osteopathic colleges and hospitals. Per 100, $8.00. (8 cents each)

***2. OSTEOPATHY**
No. 23 of a series of guidance leaflets by Walter J. Greenleaf (U. S. Office of Education). Popularly known as "Osteopathy as a Career." 12 pages. Per 100, $3.50. (4 cents each)

***3. OSTEOPATHIC SCHOOL OF PRACTICE**
History and scope of osteopathy and opportunities offered as a vocation. 4 pages. Per 100, $1.75 (2 cents each)

***4. OSTEOPATHY**
A vocational study of 24 pages, directed by Chloris Shade. Published by Morgan, Dillon and Company. Per copy, 32 cents.

5. OSTEOPATHY
A vocational and professional monograph by Thomas R. Thorburn, D.O., M.D. 24 pages. Order direct from Bellman Publishing Company, 6 Park Street, Boston, Mass. Per copy, 50 cents.

***6. SURGERY AS TAUGHT AND PRACTICED IN APPROVED OSTEOPATHIC COLLEGES AND HOSPITALS AFFILIATED FOR TEACHING**
16 pages, including 11 pages of photographs of actual surgical procedures in osteopathic colleges and hospitals. Useful in showing importance given to surgery in osteopathic training. Per 100, $8.00 (8 cents each)

***7. OSTEOPATHY — WHAT IT IS NOT AND WHAT IT IS**
24 pages. Per 100, $4.00 (4 cents each)

***8. OSTEOPATHY—QUESTIONS AND ANSWERS**
24 pages, written in the popular quiz style. Per 100, $4.00. (4 cents each)

***9. OSTEOPATHY—THE MODERN SCHOOL OF MEDICINE**
A brief non-technical discussion of the philosophy of osteopathy, by Percy H. Woodall, D.O. 32 pages, well illustrated. $5.50 per 100. (6 cents each).

***10. YOUR OSTEOPATHIC PHYSICIAN**
Briefly covers the education and training of an osteopathic physician. 4-page leaflet. Per 100, $1.00. (1 cent each)

11. OSTEOPATHIC MAGAZINE
A monthly publication for the laity, stressing the prevention, diagnosis and treatment of disease by osteopathic methods. Per copy, 10 cents (quantity prices on request). Year's subscription to schools and libraries—75c.

12. JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION
The official technical publication of the osteopathic profession. Of interest to vocational counsellors, teachers and prospective students. Per copy, 50 cents. Year's subscription to libraries and schools, $3.00.

13. ABSTRACT OF LAWS GOVERNING THE PRACTICE OF OSTEOPATHY
A 20-page digest of the qualifications for practicing osteopathy in each state and rights and privileges granted. Per copy, 10 cents.

14. CONSTITUTION AND BY-LAWS AND CODE OF ETHICS OF THE AMERICAN OSTEOPATHIC ASSOCIATION
12 pages. Per copy, 10 cents.

***15. WOMEN IN OSTEOPATHY**
A vocational monograph. Published by the Osteopathic Women's National Association with the cooperation of the Division of Public and Professional Welfare of the A.O.A. 32 pages. Illustrated. Per 100, $12.00. (15 cents each)

***16. PREOSTEOPATHIC AND OSTEOPATHIC COLLEGE REQUIREMENTS AND COURSES**
A brief reference for universities and colleges. Published by the Bureau of Professional Education and Colleges of the American Osteopathic Association with the cooperation of the Association's Division of Public and Professional Welfare. 16 pages. 10 cents per copy.

***17. OSTEOPATHY**
Published in response to requests from schools, editors, public officials, libraries, and others for a brief reference outline of osteopathy, by the Division of Public and Professional Welfare of the A.O.A. (Sixth printing). 16 pages. 10 cents per copy.

Do not request the colleges or the A.O.A. to supply you or your friends with vocational literature. The expense is too great. You must buy and distribute it yourself.

*Packet made up of starred items only $1.00. Individual items at prices listed.
Special packets made to order in quantity.

Address all orders and requests for information to:

AMERICAN OSTEOPATHIC ASSOCIATION
540 N. Michigan Ave., Chicago 11, Ill.

Latest Medical Publications

THE PRINCIPLES AND PRACTICE OF OPHTHALMIC SURGERY

By EDMUND B. SPAETH, M.D.

Professor of Ophthalmology, The Graduate School of Medicine of the University of Pennsylvania; Philadelphia, Pa., etc.

New (3rd) edition. Octavo, 934 pages, illustrated with 556 engravings, containing 798 figures and 6 colored plates. Cloth, $11.00.

The third edition of this successful work represents a thorough revision and the addition of much new material in both text and illustrations. These additions bring the contents fully up to date and make this presentation of the subject absolutely complete. The unusual demands upon our ophthalmic surgeons through battle casualties have been seriously considered and have been covered in the expansion of the material dealing with traumatic conditions.

A MANUAL OF PHYSICAL THERAPY

By RICHARD KOVACS, M.D.

Professor of Physical Therapy, New York Polyclinic Medical School and Hospital; Attending Physical Therapist, Manhattan State, Harlem Valley State, Columbus, and West Side Hospitals, New York, N.Y., etc.

New (3rd) edition. 12mo, 309 pages, illustrated with 118 engravings. Cloth, $3.25.

Physical therapy has found a steadily increasing scope of employment by practicing physicians, in hospital and clinical work and in industrial and military practice. This work presents a brief exposé of the basis and the evolution of physical therapy in a systematic presentation of the physics, physical and physiological effects, clinical uses, technique and application, dangers and contraindications of of each of the principal physical treatment methods.

LEA & FEBIGER

Washington Square Philadelphia 6, Pa.

The Ideal **liquid counter-irritant**

Many Osteopathic physicians use a liquid counter-irritant rather than a counter-irritant salve in hot weather. They rely on soothing, cooling Penorub, the rub-in that penetrates the skin to sensory nerve endings. It definitely establishes hyperemia by stimulating superficial and deep circulation, influencing markedly Lymphatic drainage. Analgesic, Penorub relieves pain. It also has a remarkable Anti-Pruritic action. The active ingredients in Penorub are Menthol, Camphor, Phenol, Methyl Salicylate, Tansy–Wormwood Oils.

PENORUB

Send for our current bulletin

AND SAVE ON YOUR DRUG AND SUPPLY NEEDS!

Prompt Service • Highest Quality

PHYSICIANS' DRUG & SUPPLY COMPANY
408 North Third Street, Philadelphia 23, Pa.

USE THIS COUPON FOR CONVENIENCE!

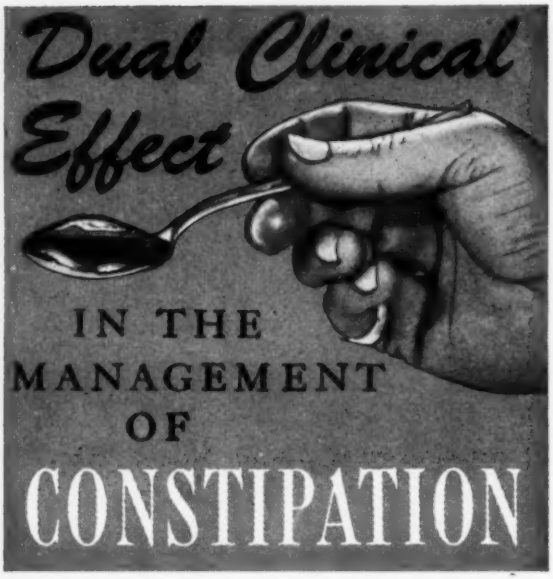
Physicians' Drug & Supply Company
408 North Third Street
Philadelphia 23, Pa.

Please send your current bulletin to

NAME .....

ADDRESS .....

CITY ..... STATE .....



IN COLONIC STASIS putrefaction often induces systemic disturbances. In the atonic colon multiplication of putrefactive bacteria occurs, thus restoration of a normal aciduric flora is indicated to inhibit putrefaction.

For this purpose, implantation of the lactic acid producing acidophilus bacilli—indigenous to the intestinal tract—is logical corrective therapy.

Neo-Cultol*, a chocolate flavored mineral oil jelly containing B. acidophilus is pleasingly palatable and non-habit forming. It exerts a dual clinical effect . . . the antiputrefactive action of the B. acidophilus plus the mechanical action of the mineral oil.

NEO-CULTOL

Trade Mark Reg. U. S. Pat. Off.

B. acidophilus in a refined mineral jelly

DOSAGE: 1 to 2 teaspoonfuls at night on retiring

SUPPLIED: In 6 oz. jars

THE ARLINGTON CHEMICAL COMPANY

Arlington

YONKERS 1 NEW YORK

*The name NEO-CULTOL is the registered trademark of the Arlington Chemical Company.

HARROWER ENDOCRINES

ENDOTHYRIN

Thyroid Extract
(thyroglobulin)

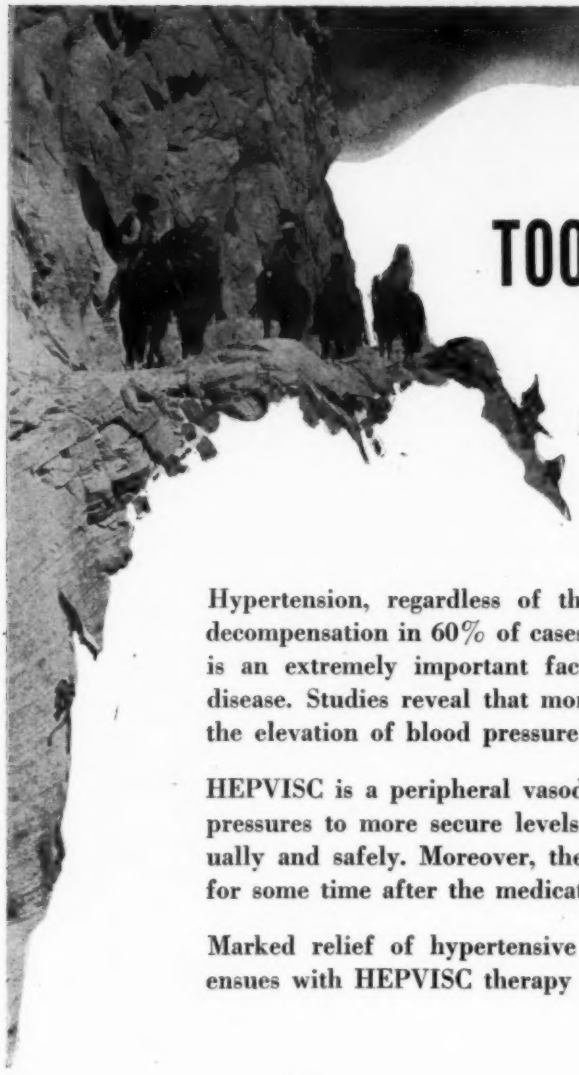
Dependable Potency
(iodine 0.62%)

Lower Toxicity
(better tolerated . . . less heart-stimulating effects)

◆

Samples and literature on request

The HARROWER LABORATORY, Inc.
GLENDALE, CALIFORNIA
NEW YORK CHICAGO DALLAS



TOO HIGH FOR SAFETY

When blood pressure rises to dangerous heights, safety demands the use of an effective hypotensive agent.

Hypertension, regardless of the cause, leads to death from cardiac decompensation in 60% of cases. The *height* of blood pressure readings is an extremely important factor in the prognosis of this insidious disease. Studies reveal that mortality increases in direct proportion to the elevation of blood pressure above the normal.

HEPVISC is a peripheral vasodilator that lowers systolic and diastolic pressures to more secure levels. This desired action is produced gradually and safely. Moreover, the beneficial effect of HEPVISC persists for some time after the medication has been withdrawn.

Marked relief of hypertensive headache, dizziness and tinnitus also ensues with HEPVISC therapy in the majority of cases.

Professional samples on request

HEPVISC

For Safe, Sustained Hypotensive Action

FORMULA:

Each HEPVISC tablet contains 50 mg. Viscum album, 60 mg. desiccated hepatic substance and 60 mg. insulin-free pancreatic substance. DOSAGE: 3 to 6 tablets daily in divided doses before meals. Bottles of 50, 500 and 1,000 tablets.

ANGLO-FRENCH LABORATORIES, Inc.
75 VARICK STREET
NEW YORK 13, N. Y.

FRONT-LINE first aid... plasma, emergency operations under fire...cuts casualty rates astonishingly. Physicians of World War II constantly face sudden death to bring modern medical miracles to fallen troops. Harrying, the war doctor's life. Weary grinds. Respites rare. Perhaps only a few moments or so now and then... time off for a welcome cigarette. A Camel, most likely—favorite brand in the armed forces.* Camel, first choice for mellow mildness, for appealing flavor . . . in this war, as in the last, cigarette of fighting men.

● New reprint available on cigarette research — Archives of Otolaryngology, March, 1943, pp. 404-410. Camel Cigarettes, Medical Relations Division, One Pershing Sq., New York 17, N.Y.

1st in the Service

*With men in the Army, the Navy, the Marine Corps, and the Coast Guard, the favorite cigarette is Camel. (Based on actual sales records.)

Camel
costlier tobaccos

BUY
WAR BONDS
STAMPS

The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 43, No. 11 | 540 N. Michigan Ave., Chicago 11, Ill. | July, 1944

COPYRIGHT, 1944, BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Lumbar Mechanics*

C. G. BECKWITH, D.O.

Hudson, N.Y.

The general principles of mechanics of the lumbar region are the same as those of regions higher in the spine, with the special adaptations dictated by the relatively large vertebral bodies, the facings of the articular facets, and the proportionately greater weight borne by this region when the body is in the upright position.

The term "low-back problem" usually includes alterations in one or more of the following: lumbar or lumbosacral mechanics; sacroiliac, iliosacral or symphyseal mechanics as directly concerned. Indirectly inequality in the length of the lower extremities, faults of locomotion, pelvic disease, focal infection and a great many other factors must be included. Of all these, the present discussion will be limited to lumbar and lumbosacral mechanics and their relation to the Still lesion.† The factors capable of influencing the problem indirectly will not be considered inasmuch as their ultimate effect is of necessity one of modifying one or more articulations by impairing the ability of the supporting structures to meet the stresses and strains transmitted to the joint itself.

In considering lumbar motion, the facets are of prime concern. "The facets on the superior processes are concave and look backward and medialward; those on the inferior are convex, and are directed forward and lateralward. The former are wider apart than the latter, since in the articulated column the inferior articular processes are embraced by the superior processes of the subjacent vertebrae."[1] Lumbar motion is present in certain ranges as dictated by the facets and the restraint offered by the ligamentous and muscular structures.

Extension is a pure motion, occurring alone. It is less than flexion. It restricts lateroflexion and rotation and in turn is restricted by these motions. It starts from above and works down.

Flexion is a pure motion, occurring alone. It is relatively free. It restricts and is in turn restricted by the introduction of lateroflexion and rotation. It starts from below and works up.

*Presented in part or in whole before the New York Osteopathic Society and the Ohio Osteopathic Association of Physicians and Surgeons.

†Still Lesion: While the Still lesion is not restricted to joints—still less to vertebral joints—yet it is to them that we refer here.

Lateroflexion is a complement to and is complemented by rotation. It is a combined motion. In the lumbar spine it is relatively free. It is restricted by and in turn restricts lateroflexion and rotation. It starts from below and works up.

Rotation is not a pure lumbar motion. Rotation in the lumbar spine is carried down from the thoracic region, where it is a free motion; or up from the lumbosacral articulation where it is permitted but slightly; or it occurs as a complement of lateroflexion. It is a combined motion, complementing lateroflexion, and when present demanding lateroflexion as an accompanying motion.

The free motions of the lumbar spine are flexion and lateroflexion.

The restricted motion of the lumbar spine is extension, with rotation but slightly present, and that secondarily.

Lateroflexion is the favored motion of the lumbar spine; the next freest is flexion. With extension restricted and rotation practically absent, the last two named are most apt to be involved in lesion processes.

An analysis of two commonly used lumbar technics will illustrate the application of these principles.

SIDE LUMBAR TECHNIC

Lesion Example.—The third lumbar is in lateroflexion and rotated to the left with extension in relation to the fourth lumbar segment (Fig. 1).

Applicability.—This technic may be used for the lumbar and occasionally for the lower thoracic region.

Preparation.—Patient is placed on his left side on the table with pillows under his head to make the cervical portion of the spine parallel with the table and in the same plane as the thoracic. Shoulders are at right angles to the table. Operator stands at the side of the table, in front of and facing the patient.

Procedure.—Operator flexes patient's thighs on his abdomen until tension is felt to accumulate at the third-fourth lumbar interval by the fingers of the right hand.

The top leg (right) is dropped forward onto the table, introducing lateroflexion and a slight amount of rotation.

Operator applies his left forearm to the right gluteal mass of the patient and carries the pelvis for-

ward and upward to lock the articulation in lateroflexion.

The upper shoulder (right) is grasped by the operator's right hand and is carried forward and downward to exaggerate the lesion. Then it is carried backward to introduce rotation down to the lesioned segments. The fingers of the left hand at the third-fourth interval interpret the accumulation of the force. This is chiefly in rotation but a varying amount of lateroflexion may be added by approximating or separating the shoulder and hip of the patient.

With the two forces accumulated at the interval, correction may be accomplished by an accentuation of the force through the operator's left forearm in either lateroflexion (carrying the force down and toward the head of the table) or forward in rotation (Fig. 2).

Subjecting this technic to a rather detailed analysis, the following considerations become apparent. The width of the shoulders and hips is usually greater than that of the waist, so that, placing the patient on his left side automatically introduces some lateroflexion to the right. In the lesion example the lateroflexion and rotation were both present to the left. Lateroflexion to the right is further increased by the approximation of the upper shoulder and the hip even as the shoulder is carried backward. The final corrective force is one of a combined lateroflexion and rotation which tends to normalize the articulation by carrying the lower of the lesioned segments in rotation to the left to bring it in line with the upper. At the articular facets the change is primarily one of *approximation* (Fig. 2) in a caudocephalic plane on the right even as there is a separation of the surfaces in a rotary plane.

The difference between this technic and the so-called "scissors" which will be discussed next has been pointed out by Eggleston.[2]

LUMBAR TECHNIC—LEG OFF TABLE—"SCISSORS"

Assuming the same lesion—third in rotation and lateroflexion to the left on the fourth, with extension, patient is placed on his left side, and operator stands in front of and facing the patient. Thighs are flexed on the abdomen until tension is felt at the lesion site. Then the top leg is dropped off the table, locking the pelvis and lower lumbar segments in flexion and rotation. Operator now grasps the left wrist of the patient and introduces rotation and lateroflexion respectively by pulling the arm forward and either up toward the head or down toward the feet. In case the arm is carried forward and upward, the lateroflexion introduced then is to the right; when the under arm is carried forward and down, the lateroflexion may be carried progressively to the left.

With the forces from below and above localized to the lesion interval, operator holds the right shoulder of the patient with his right hand while a force is applied through his left forearm to the right gluteal mass of the patient (Fig. 3). This is usually down and toward the foot of the patient's leg that is off the table. There are several modifications of this technic, but all are alike in general principle.

This technic is comparable to the side-lumbar technic in that the rotation introduced tends to bring the lower segment into line with the upper lesioned one. Lateroflexion may be reversed in comparison with the first technic. The prime difference, though, is that in the "scissors" technic the chief change occurring at the articular facets is a *separation* (Fig. 3) in a caudocephalic plane as well as a separation in rotation.

Thus it may be seen that these two technics, which at first glance appear so similar, may be so modified as to effect entirely different results. One could easily be adapted for the correction of concave rotation lesions; the other is particularly effective in convex rotation lesions. The approximation of facet surfaces in one, the separation of the facet surfaces in the other, indicate the necessity not only for a careful diagnosis of the conditions present but also a careful selection of the technic to be used.

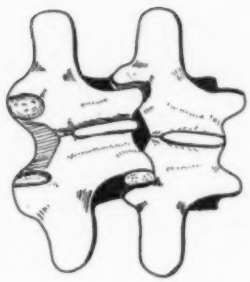
LUMBOSACRAL JOINT

The frequency of disturbed function of the lumbosacral joint justifies consideration of this region from two viewpoints: What may upset the efficient operation of the joint and how a disturbance here may affect other regions?

The fifth lumbar segment, the largest and heaviest of the vertebrae, articulates with the upper surface of the sacrum by means of the body and the articular facets. The interposition of a large disc, slightly narrowed posteriorly, between the body surfaces serves two functions: The first, as in other discs, is to act as a shock absorber; the second is to aid in the transition from the normal lumbar to the sacral curve. The angle that this lumbosacral disc surface makes with the vertical in the upright position is probably between 45 and 55 degrees. "The fifth lumbar vertebra is characterized by its body being much deeper in front than behind, which accords with the prominence of the sacrovertebral articulation; by the smaller size of its spinous process; and by the thickness of its transverse processes which spring from the body as well as the pedicles."[1] The relative depth of the fifth lumbar under the sacrospinalis mass frequently obscures its positional relation. The articular facets of this joint are so arranged normally that the lumbar facets, widely separated, fit into the sacral facets in a hook-like arrangement. Besides the usual spinal ligaments there is further fortification by the lumbosacral and iliolumbar ligaments.

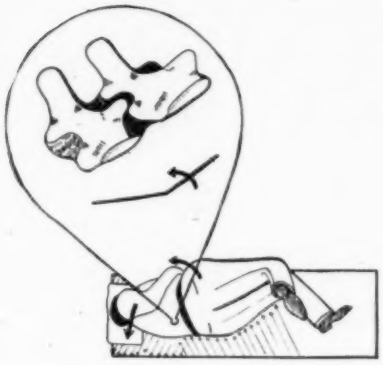
The structure of the lumbosacral joint is very strong; it must of necessity be so to meet adequately the strains to which it is subjected. Of major importance is the transition from the relatively slight sacroiliac motion to the freer lumbar motion. While motions of the pelvic ring directly influence the lumbosacral articulation, it is not the province of this paper to discuss pelvic mechanics. The weight superimposed on the sacrum is great. Before reaching the sacrum, however, it must be transmitted through a joint that is placed at a 45 degree angle. This stress is met by the shape of the component parts of the joint and is particularly controlled by the facets. The lumbosacral joint, by its position and function, is under considerable strain to maintain its stability in a normal state.

There are many factors, by no means uncommon, that tend further to weaken the joint. Congenital anomalies, such as sacralization of the fifth, spina bifida occulta, and others, lessen the joint efficiency. Differences in leg length with the consequent uneven distribution of weight tends toward instability. Faulty mechanics of the joint itself or of adjacent articulations are still other factors that may increase the stress to which it is subjected. In accommodating to



1

Fig. 1.—Illustrating rotation to left, lateroflexion to left, with extension.



2

Fig. 2.—Side lumbar technic as commonly used approximates upper facet surfaces.

3

Fig. 3.—"Scissors" technic as commonly used separates upper facet surfaces.

faulty postural attitudes, a frequent adaptation occurs with a displacement of the line of gravity of the body posterior to its usual site. There follows an accentuation of the lumbar curve, and thus a greater proportion of the weight is forced to the lumbar facets.[3]

SPONDYLOLISTHESIS

A forward positioning of the fifth lumbar in relation to the upper border of the sacrum occurs probably in the following steps: With the lumbosacral joint weakened by any of the previously mentioned causes, or the failure of fusion of the roots and laminae, the first change is probably an increase in the lumbar curve. This may occur in a normal joint influenced by any of the factors mentioned. The increase in the curve of the lower part of the back demands a narrowing of the posterior portion of the disc and the gradual forcing of the lumbosacral facets to assume more and more of the weight-bearing function. If the ligamentous, disc, and bone structures passively, and the muscular structures actively, are not able to check the process, a progression of circumstances results in further destruction of the disc, loosening of ligamentous restraints and erosion of the cartilage covering the facet surfaces. The ultimate effect of this may even be an actual unhooking of the processes.

It becomes apparent, then, that the abnormal lumbosacral joint, presenting a sufficient change to allow an anterior positioning of the fifth in relation to the sacrum, will not only cause serious impairment of its own integrity but also that of the entire spine.

SPINAL ANOMALIES

Because of the frequent occurrence of spinal anomalies, consideration of them is important in discussions of the lumbar portion of the spine and the lumbosacral joint inasmuch as these spinal structures are frequent sites for abnormal development.

The claims that developmental anomalies are trends to a future type of man,[4, 5] that they may be hereditary,[6] that vertebral lesions may in some instances be responsible,[7] and others are interesting, but for the present the effects of their presence is more important than their cause. The incidence of anomalies has been estimated at 38.7 per cent by Kraus,[8] 44 per cent by Giles,[9] and even as high as 58 per cent.[10]

Sacralization of the fifth lumbar: Eaton[11] says that "true sacralization is less frequent than pseudosacralization (excessive development of transverse processes without actual contact or fusion with the sacrum)." Occasionally the enlarged transverse process articulates with the sacrum or ilium (iliazed fifth lumbar) unilaterally or bilaterally. Any of these alter the permitted mechanics of the region. Enlargements of the transverse process may interfere with lateroflexion, and when so doing, will not only tend to weaken the joint, making it more susceptible to strain, but also will interfere with the introduction of corrective forces in an attempt to restore normal mobility to the region. If lumbosacral type of motion is demanded of the articulation between the fourth and fifth, this joint is placed under considerable strain inasmuch as it is not designed for this.

Occasionally failure of fusion of the first sacral segment—lumbarized sacrum—will be noted. The effect of this is to alter sacral mechanics.

Spina bifida occulta: Failure of complete fusion of the spinous process, occurring most frequently at the first sacral and last lumbar segment, is important because of its consequent alteration of the ligamentous attachments.

Facet facings may vary from the normal, not only in the lumbosacral but also in other vertebral articulations. It is readily appreciated that this will disturb the mechanics of the region, not only from the standpoint of motion but also from that of correction of lesions.

Numerical variations—four or six lumbar vertebrae; variations in the number of cervical or thoracic vertebrae—modify permitted mechanics.

There are other anomalies, but Kraus[12] has summarized their effect thus: "Anomalies of the back, both congenital and acquired, bear considerable weight in the production of low-back pain by causing either directly or indirectly, faulty spinal mechanics of either posture or structure, affecting particularly the intervertebral discs or the intervertebral foramina, or both."

There are other factors capable of disturbing the balancing mechanism of the spine. Among these is injury of the epiphyseal cartilage plate. Haas[13] produced scoliosis in a dog by injury to the epiphyseal cartilaginous plate on one side of the body of the vertebra. "It is believed that these changes were due to a disturbance in the blood supply to these epiphyseal cartilaginous plates." This, then, raises the question of the effect of Schmorl's and Scheuermann's diseases

as well as the multitudinous less severe injuries that a growing child invariably sustains. Lux[14] says that "a majority of the patients with spondylarthritis show an hereditary malformation of the epiphyseal ring of the vertebra. Uneven ossification causes unequal weight distribution. As the capsules of the articulations are loosened (by loss of elastic properties of the disc and narrowing of the intervertebral space), the vertebral column loses its firmness and a proliferation of bone on the edge of the vertebra occurs. Arthritis and especially spondylarthritis, if not of infectious origin, is therefor regarded as a form of reparation, with a tendency to tighten interarticulations whenever the joint capsules become loosened." Arthritis can cause faulty posture; faulty posture or stress (the effects of which are frequently lesions) may cause arthritis.

HERNIATION OF THE DISC

The increasing frequency with which rupture or herniation of the nucleus pulposus, thickening of the ligamentum flavum, and similar conditions are found to be the cause of symptoms, warrants the inclusion of this subject in a discussion of the lumbar portion of the spine. Steinbrocker[15] says: "Displaced intervertebral disc, nucleus pulposus, thickened ligamentum flavum . . . may give rise to symptoms which occur most often in the lumbar region, marked by severe or long standing backache and sciatica. Prolapsed or displaced discs have been found to cause less than 2 per cent of low backache including sciatica. The symptoms are variable, often intermittent and in the long run do not respond to conservative measures . . . Pressure on the nerve roots may be responsible . . . Sciatica is most often, however, only a referred or radiating pain from visceral or parietal disorders, usually the latter." Lane[16] in discussing herniation of the nucleus ascribes to it "persistent pain, numbness in the same region unilaterally, bilaterally, or shifting, but always the same."

Percussion of the site may cause pain; heat frequently makes it worse; possibly headache may be associated.

Maximow and Bloom[17] say: "A particularly clear segregation of functionally different nerve fibers is found in the spinal roots. In general, each segmental spinal nerve contains in its ventral roots coarse, heavily myelinated somatic motor fibers for skeletal muscles and thinner, more lightly myelinated or naked visceral motor fibers for the sympathetic nervous system. Its dorsal roots contain cutaneous fibers of several types, as those of deep sensibility, proprioceptive fibers from the muscles and tendons and afferent fibers of visceral sensibility from the sympathetic system. More than half of the dorsal root fibers are naked axons and these go out with the cutaneous rami. In the mixed trunks peripheral to the spinal ganglia the fibers of the motor and sensory roots mingle and to these are added sympathetic fibers from the communicant rami."

In view of the fact that the dorsal roots contain cutaneous fibers of several types, it may be expected that herniation of the disc into the canal will cause more sensory disturbances than the more common Still lesion. Just as the application of heat to the region may, by increasing congestion, aggravate the discomfort, so too, continued over a period of time, the disc and flavum changes may result in muscular atrophy. Percussion over the site of the protrusion and jarring of the lumbar portion of the spine may aggravate the symptoms. Constancy of the symptoms, regardless of position or treatment, must make the osteopathic physician suspicious of more trouble than is present with the lesion we so frequently encounter. To send these patients immediately to surgery, however, is not the best procedure. Many of them have been helped by osteopathic therapy in the past.

In this connection, reconsideration of the two technics discussed earlier will reveal that while the side lumbar technic—approximating the facets on the upper side of the patient—will also separate the facets on the lower side, the "scissors" technic does this more effectively and with more control from the operator. On occasion the assumption of the position that the patient is placed in for the corrective force may help relieve some of the pressure in case of an herniated disc.

SUMMARY

The free motions of the lumbar spine are lateroflexion and flexion.

Extension is restricted, rotation is absent except as a secondary motion.

Restriction of extension and rotation are most frequently encountered in lesions.

Developmental anomalies and spondylolisthesis modify the permitted mechanics of the lumbar portion of the spine.

Herniation of the nucleus pulposus may simulate spiral joint lesion disturbance.

5 E. Court St.

REFERENCES

1. Gray's Anatomy: Ed. 24. Lea and Febiger, Philadelphia, 1942, p. 104.
2. Eggleston, Allan A.: Unpublished paper.
3. Hoskins, E. R.: Development of Posture and Its Importance. IV. The Lumbar Spine. Jour. Am. Osteop. Assn., 1934 (Dec.) 34:175-176.
4. Schwartz, Louis: A Resumé with Comments on the Available Literature Relating to Posture. Weekly Health Reports, U. S. Pub. Health Serv., 1927, Vol. 42, part 1.
5. Eggleston, Allan A.: Basis for the Diagnosis of Low-Back Conditions. Jour. Am. Osteop. Assn., 1941 (Dec.) 41:180-190.
6. Bailey, H. W., and Beckwith, C. G.: Short Leg and Spinal Anomalies. Jour. Am. Osteop. Assn., 1937 (Mar.) 36:319-327.
7. Burns, Louisa: Developmental Anomalies. Jour. Am. Osteop. Assn., 1937 (July) 36:514-517.
8. Kraus, Eugene R.: Backache: A Resumé. Jour. Am. Osteop. Assn., 1936 (Dec.) 36:169-175.
9. Giles, Roy G.: Fractures of the Spine. Radiology, 1936 (Aug.) 182-5.
10. Bailey, H. W., and Beckwith, C. S.: *Ibid.*, ref. 6.
11. Eaton, James M.: Management and Treatment of the Pathological Spine. Jour. Am. Osteop. Assn., 1939 (Jan.) 38:219-228.
12. Kraus, Eugene R.: Anomalies as a Cause of Low-Back Pain. Jour. Am. Osteop. Assn., 1943 (Sept.) 43:1-7.
13. Haas, S. L.: Experimental Production of Scoliosis, Jour. Bone and Joint Surg., 1939 (Oct.) 21:963-968. Reviewed in Jour. Am. Osteop. Assn., 1939 (Nov.) 39:183.
14. Lux, A.: Spondylarthritis Due to Posture and Its Treatment. Am. Jour. Surg., 1940 (June) 48:654-657.
15. Steinbrocker, Otto: Arthritis in Modern Practice. W. B. Saunders and Co., Philadelphia, 1941.
16. Love, J. G., and Walsh, M. N.: Protruded Intervertebral Discs. Report of 100 Cases in which Operation was Performed. Jour. Am. Med. Assn., 1938 (July 30) 111:396-400.
17. Maximow, Alexander A., and Bloom, William: Textbook of Histology. Ed. 4. W. B. Saunders Co., Philadelphia, 1942, p. 200-201.

Proceedings of the Fourth Annual Meeting of the Osteopathic Academy of Orthopedists

MARCH 26 AND 27, 1944

COLUMBUS, OHIO

The Orthopedic Examination

HAROLD E. CLYBOURNE, D.O.

Columbus, Ohio.

Orthopedics and orthopedic surgery are those branches of the healing art especially concerned with the preservation and restoration of the function of the skeletal system, its articulations and associated structures. The important structures which concern the physician interested in orthopedics are bones, joints, capsules, synovial membranes, muscles, tendons, sesamoid bones, ligaments, fasciae, bursae, peripheral nerves and blood vessels. From the above definition it can be seen readily that the examination of a patient from an orthopedic viewpoint is an important and complex operation. It must not be forgotten that there are many specialties which are closely related to that of orthopedics and that they all must be taken into consideration while examining a patient.

Roentgenology bears a very important relation to orthopedics from the standpoints of diagnosis, prognosis and therapy. Neurology and orthopedics are closely related in the examination and treatment of such conditions as poliomyelitis, spastic paralysis, brachial birth palsy, syphilis of the central nervous system and joints, muscular dystrophies, the sciatic and brachial neuropathies, fractures of the spine with cord injury and tumors of the cord.

Obstetrics and orthopedics are closely connected in the diagnosis and treatment of brachial birth palsy, spastic paralysis, paralysis of the sciatic, peroneal and obturator nerves, sacroiliac and lumbosacral strains, congenital dislocation of the hip, congenital clubfoot, congenital bowlegs and fractures of the bones of the extremities in the newborn.

The assistance of the dental surgeon is of importance to the orthopedist in many cases of arthritis and neuritis.

Orthopedic affections may be classified into six main divisions:

I. AFFECTIONS OF JOINTS

(a) *Acute Infections* result from the direct infection of a joint by pyogenic organisms. They are characterized by all of the constitutional symptoms of acute inflammation.

(b) *Low-Grade Infections* comprise a large group in which the onset is gradual and the clinical course slow and indefinite. The etiological factors are well known in some and not so well known in others.

(c) *Traumatic Affections* are those which result from repeated mild trauma, which undoubtedly has an important selective action in many joint affections in determining the site of a pathological process, and from direct and indirect violence to joints, such as sprains, fractures into joints, mechanical derangements of joints, and dislocations.

II. AFFECTIONS OF BONE

(a) *Acute Infections of Bone* by direct or indirect invasion by pyogenic organisms produce periostitis, osteitis or osteomyelitis. Involvement of the central canal and the osseous structures coincidently is the most usual and is known as acute infectious osteomyelitis.

(b) *Low-Grade Affections* occur in bones as the result of infection, injury, nutritional disturbances, endocrine imbalance and congenital deficiencies. The symptoms, clinical course and prognosis are quite different from the usual low-grade affection occurring in joints.

(c) *Traumatic Affections* (fractures) are caused by a break in the continuity of the bone and result from direct or indirect violence.

(d) *Bone Tumors* may be benign, malignant (primary or metastatic), and may be derived from osteogenic or nonosteogenic cells residing in or about the bone. It is well to remember that benign tumors always remain localized, malignant tumors invariably metastasize if their growth is not arrested and metastatic tumors are secondary to malignant processes originating elsewhere in the body.

III. AFFECTIONS OF SOFT TISSUES

Certain affections of the skin, muscles, tendons, fasciae, bursae, and vascular system may impair function or induce deformity.

IV. AFFECTIONS OF THE NERVOUS SYSTEM

Certain clinical entities having a special orthopedic significance result from affections of the central nervous system and peripheral nerves. Among these the most common are anterior poliomyelitis and spastic cerebral paralysis.

V. CONGENITAL ANOMALIES

These include all deformities due to embryonic deficiencies or to mechanical or other prenatal influences, such as clubfoot, congenital dislocation of the hip and torticollis.

It is well to remember that a scientific investigation is as essential in the examination of orthopedic cases as in any obscure internal disorder, and that the examination of each patient must proceed in a logical and consistent manner.

For the first step in a thorough orthopedic examination, a complete and accurate history should be obtained with particular emphasis on the *chief complaint* as it is of special value in suggesting the nature of the ailment and in differentiating it from other conditions.

The type of *onset* should be inquired into very carefully as this, too, will help to differentiate and catalogue the trouble. A sudden onset with high temperature will suggest an acute pyogenic infection while a slow, insidious onset with a low temperature suggests a degenerative process or a low-grade infection. The *type of pain,* its *course* and *distribution* is another point which should be carefully checked into and recorded. If there is a history of *trauma,* every detail of the accident, such as time, place, cause, witnesses, type of injury, length of unconsciousness, ability of the patient to walk away from the scene of the accident and all other items pertinent to this point should be recorded. Care should also be taken to determine whether or not the symptoms were coincident with the injury, whether they existed before the injury, or if not, how long a period elapsed before symptoms developed.

The *Past History* is then gone into very carefully as to previous illnesses, operations and accidents to determine whether any earlier trouble might be a predisposing factor in the development of the present condition.

The *family history,* including that of the father, mother, brothers and sisters, is carefully checked to determine whether or not there is an hereditary factor entering into the causes of the condition.

In the case of female patients it is always important to check into the *gynecological* and *obstetrical history* as it is well known that many disorders of this type enter into orthopedic problems. A good example of this is the backache resulting from a retroverted uterus. In male patients, careful questioning should be done to determine whether there is any history of venereal infection or of prostatic involvement.

The inventory of symptoms is carefully checked into from both an objective and a subjective viewpoint. The objective signs and symptoms are those which are obvious, such as deformity, attitude, gait and restriction of motion. The subjective symptoms are those described by the patient and not apparent to the examiner.

After this portion of the examination has been completed and carefully recorded, a thorough physical examination is made. This must include all routine, clinical, and laboratory tests, and such special examinations as are indicated by the symptoms and physical findings. Unless the affection is confined to an extremity, the patient is examined with as few clothes on as possible so that the body can be inspected thoroughly. Unless this is done, valuable information may be missed. The ideal way is to have women patients wear just their shorts and bras, while the men should wear only their shorts.

The orthopedic examination is divided into two parts: (1) The body as a whole from the standpoint of posture and motion, and (2) The mechanism and characteristics of each member or part.

Under the first part, in which the body is examined for posture both at rest and in motion, the patient first stands with his back to the examiner. A good light is thrown upon the entire body so that all of it stands out in bold relief and no defects will be missed. The posture is checked while standing first with the back and then with the side turned toward the examiner. The patient then walks away from and then toward the examiner who pays particular attention to the relations of each part to the rest of the body. Beginning below, the distribution of the weight on the feet and the relation of the feet to the legs are noted; next, the contour of the legs and their relation to the knees. The relation of the hips to the pelvis, the shoulders to the chest, and the contour of the spine, chest and abdomen must also be observed.

Since there are certain characteristics common to all joints and also to the bones and soft structures between the joints, certain methods of examination are applicable to all. Therefore, in the examination of the mechanism and characteristics of each member or part certain routine methods should be followed in making examination. The most logical are: (1) Inspection, (2) palpation, (3) passive motion, (4) active motion, (5) mensuration, (6) auscultation, (7) neurological examination, (8) aspiration, (9) roentgenoscopy, (10) biopsy.

Starting with the head, the patient is asked to bend the head forward until the chin touches the chest, then backward as far as possible. It is then sidebent to the right and left until the ear touches the shoulder. The head is then turned to the right and then to the left as far as possible. Careful attention is paid to the range of motion in all planes and any sign of restricted motion is carefully recorded.

The patient is then asked to bend forward and attempt to touch the floor with his finger tips. The physiological curves are thus obliterated and there appears a rounded kyphosis composed of the spines of the lumbar and thoracic vertebrae. Attention is paid to any splinting of the spine, prominence of any spinal mass, posterior rib angle, or pelvic shift in which one hip becomes more prominent than the other. The patient then slowly straightens up and all of the points mentioned are again checked during this motion. It is also necessary to determine whether the patient can straighten up without climbing up his legs as is done in the muscular dystrophies.

Backbending, sidebending and torsion are also checked for restriction of motion and pain.

The shoulders are then checked for relation to the chest and spine and for contour and size each in comparison with the opposite side. The relation of the head of the humerus to the acromial process and the relation of the clavicle to the acromial process and to the sternum are all determined. On palpation.

any irregularities and points of tenderness are elicited and the relations of the anatomical bony landmarks checked. Active and passive motion of the shoulder joint, the sternoclavicular and the acromioclavicular joints are checked and compared each with those of the opposite side.

The elbows are next examined by palpation and inspection. Palpation of the bony landmarks will determine any change in their relations, as well as any swelling, luxation, irregularities in contour and points of tenderness. It is well to remember that when the elbow is extended, a line drawn from the external to the internal condyles barely touches the tip of the olecranon process; when the elbow is flexed, the olecranon process is below the condyles and lines connecting the three points form an equilateral triangle. In the extended position, the forearm forms with the upper arm, a carrying angle of 165 degrees. In addition to flexion and extention, rotation of the forearm at the radioulnar joint is an essential part of the function of the elbow.

Motion of the wrist and fingers should also be checked over carefully by inspection, palpation, passive and active motion and any of the other types of examination indicated.

The knee is the largest and most complex joint in the body and therefore is more frequently injured and involved in pathological processes than any other large joint. The contour of the joint should be observed on all four sides while the patient is standing. The relation of the leg to the thigh and of the knee to the hip is noted. Abnormal contour or color, deformity, or abnormality in function, such as limp or restricted motion while walking, are also observed.

The joint is then palpated on all sides and any irregularities, abnormalities and points of tenderness, are detected and recorded. If there is swelling, the patella is checked by a test for ballottement, which, if positive, indicates that there is the presence of fluid in the joint and aspiration is indicated.

The ankles and feet are also checked by inspection, palpation, active and passive motion, and any of the other examinations indicated.

The patient is then asked to lie on his back on the examining table and abduction of each leg is done and the two compared. Any restriction or pain on motion is recorded. Torsion of each leg is next tested for restriction of motion and pain. This pain may be found in the ankle, knee, or hip joint. Restriction of motion is indicative of hip joint involvement.

The Lasègue test for function of the sacroiliac joints is carried out. Any pain or restriction of motion is noted. The angle of extension is also measured and compared with that of the opposite leg.

The lumbosacral joint is next checked by asking the patient to raise both legs at the same time. Inability to do this, or resulting pain, indicates some involvement of this joint.

Goldthwait's test or the bent leg-raising test is next done for further check on the sacroiliac joints and to differentiate sacroiliac from lumbosacral joint affection. Sacroiliac disturbance may be determined also by two tests, either of which will cause pain in the affected joints: (*a*) With the patient on his side, exert strong pressure on the crest of the ilium; (*b*) with the patient on his back, press downward on the symphysis pubis.

The fabere (Patrick's) test, consisting of placing the heel on the patella of the opposite leg and pressing downward on the bent knee is next done to determine function in the hip joint. Here, also, any restriction of motion, or pain elicited by the test, is carefully checked against the opposite side.

The patient is then asked to raise the torso and touch the toes, with the legs in extension, as a test to determine the condition of the sciatic nerve. If there is any inflammation in either sciatic nerve the patient will be forced to flex the leg on the involved side.

The patient is then turned on his face and an attempt is made to touch the heel to the buttocks. This is a test of the lumbosacral joint and if the patient cannot do it without raising the hips from the table, or if he feels pain, it's an indication of trouble there.

While the patient is in this position the buttocks, and the medial, posterior and lateral aspects of the thighs are checked for areas of anesthesia or hyperesthesia. The ankle reflex is also checked while the patient is in this position although it can also be done with him kneeling on the table or on a chair. The spine and the sacroiliac and lumbosacral joints are then checked by palpation for any deviations from normal or areas of sensitivity.

The patient is then turned on his back again and the patellar, Babinski and ankle reflexes are determined.

In many orthopedic cases, especially those involving the low-back region, it is necessary to perform a lumbar puncture to secure a specimen of spinal fluid for laboratory tests. If this is done, a Queckenstedt test should be a routine part of the puncture. The method we have found to be the most reliable at Doctors Hospital is performed with the patient on his side. A water manometer is connected with the needle and a sphygmomanometer cuff is carefully wrapped around the patient's neck. The reading is first made without any pressure on the neck. Then 10 mm. of mercury pressure is applied and the reading made. Readings are made every ten points until 50 mm. of mercury are applied and recorded. Pressure is then released and reading again made every ten points to zero. By so doing a careful reliable curve is established which will clearly indicate any type of rise and fall in the spinal fluid pressure. The spinal fluid is then withdrawn and sent to the laboratory for a complete check which includes amount, appearance, cell count, protein determination, albumin, sugar, chlorides, lymphocyte count, endothelial count, a Kahn and colloidal gold curve. Where indicated, the fluid is cultured.

After all the laboratory tests are in, and these should always include complete blood tests, the case may be studied from all angles. Everything has been recorded so if something further is needed to complete the picture it is clearly indicated. By a careful examination of this type, the physician is not only benefiting the patient examined but also himself for many things are going to be found which will necessitate further study on the examiner's part.

Doctors Hospital, Dennison at Third Ave.

Symposium on Problems of the Low-Back Region

PRESENTATIONS BY DR. ROBERT F. HAAS, Dayton, Ohio; DR. THEODORE C. HOBBS, Columbus, Ohio; and DR. R. C. KISTLER, Wyandotte, Michigan. DR. J. A. STINSON, St. Petersburg, Florida, SERVED AS MODERATOR.

DR. ROBERT F. HAAS, Dayton, Ohio—
REPORT ON STANDING X-RAY STUDIES

For my part on this program under etiology of low-back problems, I would like to present the following survey of findings in 307 consecutive standing x-ray studies that I have made:

A SURVEY OF FINDINGS IN 307 CONSECUTIVE X-RAY STUDIES TAKEN IN THE STANDING POSITION

Male	153
Female	154
Right leg short	141
Left leg short	116
Sacrum low on right	124
Sacrum low on left	107
Sacral torsion	24
Lumbar curve or convexity to side of short leg	138
Lumbar curve or convexity to side of long leg	27
Facet anomalies between lumbar and sacrum	125
Multiple facet anomalies	68
Sacralization of fifth lumbar	15
Lumbarization of first sacral segment	4
Six lumbar vertebrae	9
Femur heads in normal position (2 inches anterior to mid-line)	169
Femur heads more posterior than normal	7
Femur heads more anterior than normal	124
Normal sacral angle (40 to 42 degrees)	38
Sacral angle increased in flexion	107
Sacral angle decreased in extension	149
Arthritis and spondylolisthesis	51-A 15-S
Thinning of intervertebral discs between fifth lumbar and sacrum	72
Perpendicular line from center of body of third lumbar through mid-third of sacral top (normal)	66
Perpendicular line anterior	172
Perpendicular line posterior	60
Marked wedging of disc—fifth lumbar and sacrum	65

These findings have impressed me very much, and I believe that they will show the value of standing x-ray studies and other x-ray examinations of the spine and pelvis, particularly in the everyday practice of osteopathic physicians.

A large number of anomalies are present. These must be taken into consideration in any low-back study as they have a definite bearing on prognosis.

In the lateral view, when the weight-bearing line, dropped from the center of the body of the third lumbar vertebra, passes anterior to the middle third of the sacral top, weight is carried abnormally on the articular facets. The function of the facets is to guide motion and not to carry weight.

When the weight-bearing line falls posterior to the middle third of the sacral top, spasm is often encountered in the sacrospinalis group of muscles.

Patients in whom the sacrum is found to be in extension and the sacral angle reduced have always presented a problem in treatment. They have shown marked fatigue as in hypoadrenia. Joint lesions have been found in that region of the spine most closely related to the origin of nerve ganglia supplying the adrenals.

[A part of Dr. Haas' presentation was in the showing of selected films. Discussion of the measuremental lines drawn to determine sacrovertebral angle brought out reference to the work of Dr. Eugene R. Kraus[1] of New York City, with some variations developed by Drs. Haas and Stinson at previous sessions.]

DR. THEODORE C. HOBBS, Columbus, Ohio
X-RAY EXAMINATION

X-ray examination of the low-back region presents many problems and possibilities not encountered in other parts of the body. It implies a study of bony parts as well as a functional, weight-bearing or postural study of that region.

There has been a decided tendency on the part of some members of our profession to emphasize the postural angle to the exclusion of the study of the bony parts involved. This is easily understood. It has, nevertheless, in many cases, led to criticism, some of which is well founded.

Many times the cause of low-back discomfort can be discovered on the basis of a single weight-bearing film, with only a gross shadow or silhouette of the spine and pelvis. An obvious and typical so-called anatomical short leg can thus be diagnosed. A lift is applied; the patient gets relief, and the doctor can go on to the next case. If, however, there is a coincident and separate condition, it may be unsuspected unless films of good technical quality are obtained. The slightest motion during an exposure may be enough to obliterate the evidence of a beginning pathological condition.

A few years ago a sarcoma of the pelvis was so missed in our department. Fortunately for us, we had an opportunity to re-examine the patient about three weeks later, at which time a diagnosis was established. A re-examination of the original films showed evidence that the process would have been apparent had it not been blurred by motion. We would have been in a very unfavorable and embarrassing position, had the second examination been done by someone else. The patient and the second doctor would have been convinced that we were in-

1. Kraus, Eugene R.: Backache: A Resumé. Jour. Am. Osteop. Assn., 1936 (Dec.) 36:169-175.

competent, even though we had fully and correctly analyzed the postural aspects of the case.

Many people go for long periods with marked postural change without having developed any apparent symptoms. The fact that this deviation is apparent does not release the roentgenologist from his obligation to search for other causes of pathological or clinical significance.

It is obvious that a complete examination is going to cost more in time and material. However, a thorough examination need not cost the patient excessively. One or two extra films will often mean the difference between success and failure. Success is as important to the physician as to the patient.

This paper is devoted primarily to the weight-bearing mechanical aspects of x-ray examination of the low-back region. It contains an outline of the method employed at Doctors Hospital. This has been arrived at as the result of conclusions drawn in collaboration with Dr. Harold E. Clybourne, head of the Department of Orthopedic Surgery, and is considered to be the minimum procedure necessary for diagnosis. It was evolved from a study of film findings correlated with clinical findings and end results of treatment. Special x-ray studies are made as the indications and needs are demonstrated. Stereoscopic films are frequently used for the sacroiliac region. The routine established has proved satisfactory in our hands.

Many variations in technic are employed throughout the country in obtaining, as well as in analyzing, weight-bearing films. We originally used a plumb bob and wire to establish a vertical base line. We had some trouble with patients brushing against it so changed to a taut wire held by a spring. This was accurate since the table was level, but it proved to be troublesome. Since the table is level, the edge of the film can serve as a base line unless the film is crooked in the casette at the time of exposure. To guard against this possibility a fine pencil mark was made on the front screen of one casette. We drew this line in the horizontal plane although it can be placed in the vertical plane if desired. This cuts down on the fluorescence of the screen sufficiently to give a very distinct white line on all films taken with that casette. This line serves as a base.

The patient is placed flat on his back on the table with both feet kept pointing up by tying the toes of the two shoes together. A 14 by 17 inch film is exposed with the ray and film centered at the fifth lumbar level. The patient then gets off the table and removes his shoes. The table is changed to the vertical position. The patient stands on a level stool with his back to the table with his heels together but not touching each other. The backs of the heels are so placed that the patient is about one inch from touching the table with either the buttocks or shoulders. The mid-table stripe is at the mid-malleolar position. The toes diverge evenly to suit the patient's natural stance. The patient stands with his weight on both feet with knees straight. He is then pushed back so that his hips and shoulders are touching the table. Another 14 by 17 film is exposed with the ray centered at the fifth lumbar level.

The patient is then turned to the lateral position, centering the lumbosacral junction to the up-and-down line on the table, and letting the feet assume a natural position. The arms are crossed over the chest, with the hands on the opposite shoulders. The tube is not moved from the previous centering. The patient is immobilized with a canvas band around the hips and a third exposure is made. This may be a 14 by 17 or an 11 by 14 film, depending upon the size of the patient. The anatomy of many patients requires the lateral view to be made in two sections. In that case, a 10 by 12 film is used as described above for the lumbosacral junction, using a small cone. The tube is then shifted higher and a second 10 by 12 is exposed of the lumbar region alone.

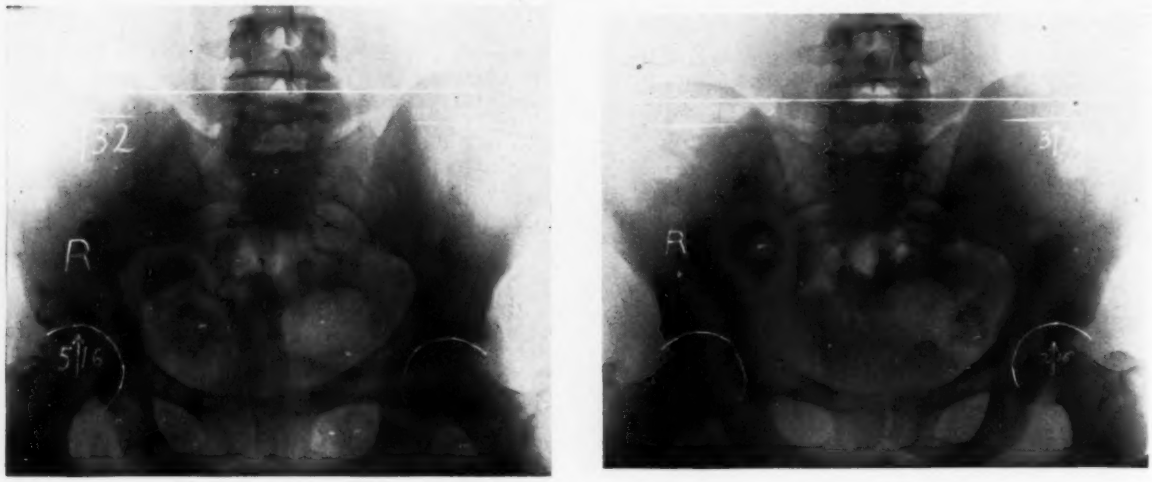
The question has been raised whether in a patient so immobilized a dependable picture can be made. A careful check has shown that with proper care the patient can be immobilized as described above without materially changing the postural relationship of the lumbosacral region. This immobilization permits good bone detail. Most patients can hold still for the required time. Full immobilization for the anteroposterior view does materially alter the postural relations. Motion can be tolerated in this view, however, since there is a supine study for bone detail. Our weight-bearing films are exposed at a 40 inch and the supine films at a 36 inch tube-film distance.

The routine films are developed and inspected. Quartering films of the lumbosacral region are taken with immobilization if additional information about this region is needed. Many times the quartering films are the only films showing the actual cause of the trouble, although evidence of change is usually apparent on the routine films. Nearly half of the patients we examine for low-back troubles are given quartering film studies.

No originality is claimed for any part of the procedure used in analyzing the postural mechanism. We do not follow the elaborate technic frequently used. Variations in the heights of the femur top shadows as compared with the base line are noted. An attempt is made to estimate the unleveling of the sacral base. Anatomical variations make this procedure difficult. When the patient's anatomy makes it possible, a projection is drawn through the two Vs formed by the sacral alae with their corresponding articular processes. In our experience, we have felt that the heights of the iliac crests and sacral alae are subject to enough anatomical variation to make their measurement of very questionable value. In our work these measurements have never seemed to add anything of diagnostic importance, and sometimes seem to confuse the findings. A note is made of the gross deviations between the iliac profiles as an index to pelvic torsion.

The projected line of the sacral base is measured above the femur top shadow. Our procedure places chief emphasis on the unleveling of the sacral base. Much of the original work bringing out the importance of the unleveling of the sacral base was done by Dr. Paul T. Lloyd at the Philadelphia College of Osteopathy. Measuring technic that we use is based on his work.

The deviation of the pelvis from the mid-heel line is noted but not measured. Lateral lumbar curvatures are noted together with the deviation of the spinous processes from the mid-vertebral position.



Illustrating the effect of faulty positioning in taking standing pelvic x-rays: Film on the left, taken with the right foot everted, shows the left leg to be five-sixteenths of an inch shorter than the right leg, with corresponding unleveling of the sacral base. Film on the right, taken with the left foot everted, shows the right leg to be two-sixteenths of an inch shorter than the left leg. This patient actually had no short leg and no unleveling of the sacral base as shown by film taken with the patient standing properly.

If there is an unleveling of the sacral base to an appreciable extent, the use of at least a temporary lift is usually considered. If the femur top shadow is lower on the side of the unleveling, it is assumed that probably some lift will be needed permanently.

If there is a lateral curvature of the lumbar spine with the concavity on the high side and with the spinous processes deviating toward the concavity, it is assumed that less caution is needed with the starting lift. If the lateral curvature disappears in the supine film, a much more rapid response is expected as the ligaments are obviously not greatly shortened.

Shifting of the pelvis from the mid-heel line is considered in general an indication for a lift on the side that the pelvis has shifted from. If this is in contradiction to the findings of the sacral base, caution and an early re-check with the lift in place is indicated.

A contralateral lumbar curvature is also considered an indication for extreme caution and an early re-check. Rotation of the spinous processes toward the side of the convexity is another indication for extreme caution. In the absence of lateral wedging of the vertebral bodies, it has proved to be a strong indication of referred low-back pain from extrinsic cause.

A lateral list of the lumbar spine, without lateral curvature, suggests the possibility of herniated nucleus pulposus. A contralateral lumbar curvature, with what appears to be an otherwise typical anatomical short leg and without contralateral unleveling of the sacral base also suggests this possibility.

All of these statements are generalities and subject to modification by other findings, such as evidence of condensation into the anterior common ligament or lateral common ligaments, evidence of old fracture, arthrodial arthritis, arthrosis and anatomical variations. Congenital defects, especially at the lumbosacral level, are frequently responsible for existing curvatures. The curvature is usually away from the unilateral defect. Faulty closure of the pedicle and defects at the pars intermedia are frequently encountered if quartering films are made. Anatomical variation in facet planes should be noted. These are especially important at the lumbosacral level.

The occurrence, which is frequent, of unilateral facet plane variation is probably of more clinical significance than where the variation is bilateral. Findings in the lateral film may change or modify these conclusions.

In the past less emphasis has been placed on the lateral than on the anteroposterior weight-bearing film. Careful study of the lateral film will reveal as much diagnostic information in the average case as will the anteroposterior film. Evidence of a spondylolisthesis cannot always be detected on the anteroposterior film. A lateral film is always necessary for confirmation and evaluation. Change in the intervertebral spacings should be noted. Extreme care should be exercised in concluding that there is a narrowing of the lumbosacral interspace, as the region is subject to wide anatomical variation. However, narrowing of an interspace or localized and isolated lipping into the anterior common ligament may be the only apparent clue to a herniated nucleus pulposus. A loss of the lordotic curvature also is suggestive. It is understood that herniated nucleus pulposus and hypertrophied ligamentum flavum cannot be diagnosed with certainty by x-ray without the use of contrast media of some kind. Many of these lesions give no clue at all on routine film study.

A gravitational or perpendicular index line from the third lumbar body is drawn. If this touches the extreme posterior portion of the weight-bearing surface of the sacrum or passes behind it there will be a tendency for weight transmission through the arthrodials. If there is also present excessive condensation through the lumbosacral arthrodials this is considered, in general, an indication for supplementary support to splint the region. If the gravitational index line passes anterior to the weight-bearing surface of the sacrum it is considered evidence of deficiency of the anterior abdominal muscles. Corrective exercise and abdominal support are considered.

DR. JAMES A. STINSON, St. Petersburg, Florida—

SUMMARY OF THE DISCUSSION

Dr. Hobbs, before going into his prepared paper dealing with standing radiographic technics, asked for a showing of hands of those doing their own x-ray work. While no count was made, it was evident that about fifty of those present had their own x-ray apparatus.

Two points were made by Dr. Hobbs, with his films and in his paper! First, we must not expect good bone detail in the standing, weight-bearing or "postural" film. Movement of the subject usually makes it difficult to get anything except "an average of what the patient is doing while in the weight-bearing position."

Discussion brought out the general feeling that the "postural" study should not be used for anything except just what the name implies. In both the acute and the chronic conditions, flat films are needed for bone detail. An anteroposterior view of the pelvic and lumbar regions, plus a reclining lateral lumbar film, will usually give the information needed in the chronic cases. In acute cases, where there is a possible fracture of parts, the anteroposterior and lateral views may not display fractures about the articular facets, laminae, or the posterior margins of the bodies. In cases where the symptoms suggest severe bone injury, it is customary to add two or more oblique views to the study.

The second point that was well portrayed by Dr. Hobbs' presentation is the necessity for careful positioning of the patient. The three films of an individual with no low-back symptoms—one with the feet evenly placed and standing at ease, showing no difference in leg length; the second with one foot straight and the other with the toes turned out, showing a low femur top on the everted foot side; the third with the opposite foot turned out and showing a low femur top on that side—reveal three different sets of measurements.

Dr. Hobbs is to be complimented on the meticulous attention to detail with which he has dealt with this problem. His technic of taking films and of measurements is highly recommended.

Discussion brought out the details of our own start in this matter of standing x-rays. A brief review of the work of Drs. Fryette,[2] Schwab[3] and Hoskins[4] brought to light the fact that the cases making up the first series of 534 were selected for standing study because they were not improved by the usual methods of treatment. Dr. Fryette for a long time had wanted to examine a patient in the weight-bearing position. Dr. Hoskins developed a technic for "getting an average of what the spine looked like while at work." The first films made were long exposures—some as long as forty seconds. Obviously there was not much to expect in the way of bone detail.

Dr. Hoskins had noted on some of the flat films that there was a band of increased density in the bone on one side, extending from the hip socket obliquely across the ilium and sacrum and into that side of the spine. This he attributed to greater weight bearing on one side than on the other—a result of Wolff's law that bone grows in relation to stresses.

Dr. Hoskins had a way of putting the patient at ease by making him laugh. In case this failed, he broke the stiff, forced position by asking him to take a few long, deep breaths. This was his trick of getting an accurate measuremental film of the usual posture of the individual.

Attention was called to the fact that in this first series of cases, 97 per cent of the patients were improved by the use of lifts.

Discussion of the varied technics brought out the comment that while there were differences in the manner of handling the patient and the x-ray apparatus, it was like a number of musicians who play the same musical composition on the piano, but no two have an identical touch or expression. However, it seems that good clinical results testify to fairly accurate work.[5 to 14, incl.]

Comment was made on the work of Dr. Paul Lloyd on the sacral base, and the measuremental lines drawn to aid in working out a treatment program, especially in congenital anomalies.

Attention was directed to the many fine articles on standing x-ray work, which have been published in THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION and in other osteopathic publications. We have attempted to list these in our bibliography.

From a study of clinical results, most of us are in agreement that standing films have been of immense value. Like most new ideas, it is easy to get overenthusiastic about the procedure. It is not a universal panacea, and is subject to much abuse. Cases were cited in which the lift was used on the high side, perhaps to be changed later, and of the many cases where lifts were used for a short period only.

Among the many points brought up for discussion was one concerning the medical dictionary definition of "static sciolosis." Mention was made of an early edition of a standard dictionary (1911) containing the definition that a "static sciolosis" is one "caused by a difference in the length of the legs." Correspondence since that time brought out the fact that a dictionary published by J. B. Lippincott Company in 1897 had essentially the same definition.

Perhaps we cannot claim priority for the "short leg" idea, but certainly the osteopathic profession can be given credit for originating the x-ray technics for accurate measuremental findings.

Mention of sciolosis brought out the fact that the current (March, 1944) issue of THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION reprinted an article written in 1932 by the late Russell R. Peckham. It has been given new prominence by recent medical publications stating the same principles originally laid down by Dr. Peckham.

No discussion of low-back problems would be complete without serious consideration of the distortions of the anteroposterior spinal curves.[16, 17, 18] The extremes of this are probably in that class of anterior lumbar conditions called spondylolisthesis. The question of the origin of the pain in spondylolisthesis brought forth mention of practically every visceral condition that could cause low-back distress. Then the question of muscular, ligamentous and articular pain was discussed. The concensus was that pain came from the numerous nerve endings in the highly

specialized articular cartilage. The "facet syndrome" has been discussed in M.D. literature and Ghormley[19] described an operation for fusing the articular facets, thus relieving the pain. It is probable that this sensory disturbance extends into, or is referred reflexly to, adjacent somatic structures.

Strong's recent article[20] in THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION on the distribution of pain in relation to lumbar lesions and sciatic neuritis was cited as one of the best articles published along this line.

Osteopathically, many of our ranking technicians have considered the anterior lumbar condition as one that presents a most difficult technical problem. Several articles have appeared in our literature; perhaps the latest has been that presenting the Jenning's sacral technic[21, 22] which seems to be one of the most easily used and best adapted to secure the adjustment necessary for correction.

Meyerding's work[23] at the Mayo Clinic on spondylolisthesis was quoted. In his summary he says that the treatment program is (1) An attempt to replace the displaced vertebra by manipulation, (2) in case this fails, the use of a body cast, and (3) spinal fusion, if both previous efforts fail. Meyerding mentions "subluxations," "displaced vertebrae," and "reversed spondylolisthesis."

Since several other presentations later in the program went into the matter of ruptured discs and cord tumors, only two comments will be included here. The first is that Dandy of Johns Hopkins is reported to have stated that less than 10 per cent of the suspected cases actually had ruptured discs. The second is the rather general feeling that spinal fusion will be added by more and more surgeons to the present operation for removal of ruptured disc.

In attempting to work out a bibliography, we were confronted with two problems. The first is that we, at the St. Petersburg Osteopathic Hospital, were assigned a research problem by the Academy of Applied Osteopathy. We are to study and chart all the possible lesions of the fifth lumbar vertebra. This study was undertaken with the best of intentions. We first tried to review all literature on the subject. We have, at present, 176 osteopathic articles along with some 26 texts on osteopathy. Add this to what we find in M.D. literature, and it becomes apparent that we cannot list all references. The second problem is to try to put on paper some of the quotations that were made at the time of the discussions on the low-back problem.

We hope to be forgiven if we did not credit all the information cited and quoted, and recommend for your reading the following:

REFERENCES

1. Kraus, Eugene R.: Backache. A Resume. Jour. Am. Osteo. Assn., 1936 (Dec.) 36:169-175.

2. Fryette, H. H.: Physiological Movements of the Spine. Jour. Am. Osteop. Assn., 1926 (Apr.) 25:654-655.

3. Schwab, W. A.: The Principles of Manipulative Treatment. The Low-Back Problem. Jour. Am. Osteop. Assn., January, 1932, to March, 1934, incl.

4. Hoskins, E. R.: The Development of Posture and Its Importance. Jour. Am. Osteop. Assn., 1934 (Nov.) 34:125-126.

5. Beilke, Martin C.: Roentgenological Spinal Analysis and the Technic for Taking Standing X-Ray Plates. Jour. Am. Osteop. Assn., 1936 (May) 35:414-418.

6. Kerr, H. E.: Grant, J. H., MacBain, R. N.: Some Observations on the Anatomical Short Leg in a Series of Patients Presenting Themselves for Treatment of Low-Back Pain. Jour. Am. Osteop. Assn., 1943 (June) 42:437-440.

7. Grant, J. H. Some Common Anomalies, Variations and Diseases of the Pelvis and Lower Extremities. Jour Am. Osteop. Assn., 1940 (Oct.) 40:87-88.

8. Bailey, H. W., and Beckwith, C. G.: Short Leg and Spinal Anomalies, Their Incidence and Effects on Spinal Mechanics. Jour Am. Osteop. Assn., 1937 (Mar.) 36:319-327.

9. Eggleston, Allan A.: A Basis for the Diagnosis of Low-Back Conditions. Jour. Am. Osteop. Assn., 1941 (Dec.) 41:180-190.

10. Streicker, Walter M.: Some Radiographic Aspects of the Low-Back Problem. Jour. Am. Osteop. Assn., 1943 (Feb.) 42:267-271.

11. Shuman, David: Symphysis: Estimating Sacroiliac Motion. Osteop. Prof., 1942 (May).

12. Swift, Louise F.: A Brief Survey of Ninety Roentgeno-posturgraphs. Clin. Osteop., 1941 (Mar.) 37:117-126.

13. Pearson, Wallace M.: Weight-Bearing X-Ray Studies. Jour. Osteop., 1938 (Mar.) 45:15-17.

14. Pearson, Wallace M.: Weight-Bearing X-Ray Studies. Jour. Osteop., 1938 (Sept.) 45:14-17.

15. Denslow, J. S.: Strictly Manipulative. Jour. Osteop., 1941 (Mar.) 23-26.

16. Downing, Carter Harrison: The Orthodynamics of Posture. Jour. Am. Osteop. Assn., 1936 (May) 35:405-413.

17. Edmiston, S. C.: Asymmetry. Osteop. Prof., 1938 (Feb.) 11-13.

18. Downing, W. J.: Abnormal Anterior Position of the Fifth Lumbar Vertebra. Jour. Am. Osteop. Assn., 1936 (Aug.) 35:577-579.

19. Ghormley, R. K.: Low-Back Pain, with Special Reference to the Articular Facets, with Presentation of an Operative Procedure. Jour. Am. Med. Assn., 1933 (Dec. 2) 101:1773-1777.

20. Strong, Leonard V.: Differential Diagnosis of Sciatic Pain. Jour. Am. Osteop. Assn., 1943 (Nov.) 43:147-150.

21. Stinson, James A:. Physiological Lumbosacral Technic. Jour. Am. Osteop. Assn., 1942 (Nov.) 42:133-135.

22. Jennings, Charles H.: Description of a Specific Lumbosacral Technic. Jour. Am. Osteop. Assn., 1942 (Nov.) 42:135-136.

23. Meyerding, H. W.: Gradation of Displacements. Radiol., 1933 (Feb.) 20:108.

DR. RAYMOND C. KISTLER, Wyandotte, Mich.

THE POSTURCHEK* AS AN AID TO DIAGNOSIS

We have long needed some standard of precise and delicate measurement whereby to gauge accurately the dynamics of the human body; to determine more definitely the actual working mechanisms under specific conditions. Neither clinical nor radiographic methods interpret physiologic conditions in terms of dynamic measurements. With the Posturchek* we are able to interpret, in scientific terms of weight-measurement, normal distribution as against deflection of the force of gravity.

No single, specific position can be designated as normal posture, in that normal is a state variable with, and dependent upon, individual physiologic accommodation to the elemental force of gravity.

Correction of postural defects frequently improves functional states and physiologic activities to such a degree that many seemingly unrelated symptoms are banished. Maintenance of correct posture may be the only treatment needed to dispose of any number of dysfunctions and maladies of obscure origin. Metabolic imbalance or infectious states respond favorably through improved vegetative functions (trophic, secretory, and vasomotor); sequelae of traumatism, mechanical irritations, and spastic conditions subside; visceral and somatic reflex circuits are set free.

Posture is governed, instinctively, by correlation of the muscular system with the cerebellum through proprioceptive reflexes. An individual is continually overcoming imbalanced positions induced by the force of gravity, by assuming positions of balance. The sense of balance and the state of equilibrium must operate in both the dynamic and in the standing positions.

*Posturchek was described first under the name of Robalin in an article by Dr. Carter H. Downing, Jour. Am. Osteop. Assn., 1936 (May) 35:405-414.

Physiological balances are naturally disturbed by pathological conditions of the muscles. Obviously many mechanisms are concerned in maintenance of equilibrium and, broadly speaking, their mechanics are dynamic rather than static, since they are due not to gravity but to need for counteractive force.

Man at birth represents in large part the recorded imperfections of the past. After birth he must adjust himself to the functional and trophic demands environment places upon his organism.

Structural symmetry and physiological balances are never identical in any two individuals, nor are these factors balanced in one being.

When we realize that there is no such thing as perfect symmetry of structure, because either of growth ingredients or functional and trophic demands forced upon the organism by environment, we begin to comprehend the tremendous importance of a method assuring factual knowledge of architectural or physiological errors of balance by the use of which we may establish relatively normal equilibrium. Proper postural balance is the primary consideration in osteopathic corrective procedures, since its attainment minimizes causal stresses, tensions, gravity imbalances and weight shifts.

Postural mechanical faults inevitably develop from carelessly assumed habits as well as from errors induced by occupations. Regardless of diverse causes, whether functional or organic, establishment of proper equilibrium is the essential thing and adjustment to meet this demand can vary only in degree and complexity, not in principle.

The x-ray serves as an excellent aid in visual interpretation of structural preversions. Recognition of the fact that bone is capable of being molded by continued stress is inevitable after the visualization of a few radiographs. In parts where the transmitted stress cannot be shunted to another region (the fifth lumbar as an example), the changes in the bone become very marked. In younger individuals particularly, the continued stress may result in wedging which is so characteristic of scoliosis. In these instances the supportive tissues can not take up and redirect the forces entering the joint, so that bone itself has to bear the strain. Regions above and below the lesion may develop a hypermobility to compensate for the restriction in motion.

One of the chief functions of bone is to bear weight. Bone hypertrophy occurs in those cases in which there is an attempt on the part of the body to elaborate more weight-bearing surface. In one sense the lippings of hypertrophic arthritis could be considered as the attempt to provide a greater area for weight-bearing.

Variations from normal bone density are primarily due to the changes in internal architecture as influenced by stress and muscle pull affecting the part. Wolff's law demonstrates this.

The increased density of the weight-bearing portion of one ilium in cases of a difference in leg length implies that there is a preponderance of stress on one side in standing. The changes in bone shape, size and density, are evidences of chronic processes. These factors have been in operation over a relatively long period before their effect becomes evident on the radiographic film. However, it is well to remember that though the alterations in bone are slow as compared with those in the soft tissues, their presence can be anticipated as soon as the resistance of the soft tissues to the deforming process is overcome.

The standing film is more nearly accurate than that taken in the lying position because the spine is depicted at work. Even with the use of stereoscopic films the difference in bone position may be so slight as to defy detection. With the exception of the increased size of some few muscles that may appear on the radiograph, and a change in the relations of the bony structures, which may or may not be pathognomonic of lesion disturbance, those effects of lesion demonstrable by the x-ray are the result of chronic and long-standing abnormal stresses. But before changes in bone occur, the first line of defense must be broken down. This resistance offered by muscles, ligaments, and other soft structures is sufficient to care for temporary changes and even offers a deterent to deforming forces that eventually prove too much for them.

If x-ray is not available, palpation is still a good method. This should be conducted in the standing, sitting, and lying position. Each position affords valuable information and should be utilized in the examination of every patient seen for the first time, or in patients who fail to respond as they should.

Anatomical inequality in leg lengths represents one of the more common morphologic variants. However, there are many causes of short lower extremity besides those imposed by growth or morphologic influences. Acquired shortening may result from epiphyseal injuries in early life, coxa vara or valga, genu varum or valgum, Perthes-Legg disease, fracture or dislocation with deformity, destructive affections of bones and joints, etc.

Anomalies or acquired structural defects of innominate or sacrum may alter the normal horizontal level of the sacral base plane. Flat feet may cause apparent lengthening or shortening. Sacroiliac lesions or contractured states in sacrospinalis and psoas musculature may alter pelvic equilibrium and lend confusion to differential diagnosis. It may be estimated, however, that at least 60 per cent of the human race present sufficient differences in actual leg lengths to alter equilibrium beyond the point of full compensation and give rise to secondary functional disorders.

The heel lift is our basis of correction for anatomical short leg up to one-fourth inch. Here, overcorrection is our greatest danger and may be just as disastrous as a misguided attempt to correct a supposed primary error elsewhere. Organic scoliosis should be approached with caution, as the condition in itself indicates partial compensation already made. In cases of short leg, presenting single total curvature compensation with excessive weight-load carried to the long leg, it has been found that correction which establishes the best physiologic equilibrium most nearly approaches the structural equation. In moderate scoliosis, the lateral deflection of weight-load to the long leg is decreased and the line of gravity corresponds more closely to the median line. Such compensation necessitates a less degree of correction to establish physiologic equilibrium. Again, there is another type of scoliosis in which compensation is so nearly complete that the line of gravity falls practically in the midline—is deflected to neither side—and these cases are usually symptomless. It is not advisable to upset the equilibrium thus established.

In marked scoliosis with notable sidesway of the pelvis, instances have been found where the lateral deflection of weight-load was actually to the short side and attainment of the best physiological equilibrium required only a fraction of the lift mathematically indicated to approach the structural necessity. Overcorrection of this type of scoliosis will markedly disturb equilibrium and is a mistake easily made. Therefore, we cannot approach the therapeutic problem exclusively on a basis of exact mathematical correction. It is essential that we ascertain the point of compromise between compensation and structuro-physiologic faults which fuse and ultimately reduce to disturbances in postural balance. If the best symptomatic effects are to be obtained for the patient, correction must be established to meet final physiologic demand.

The placement of the feet on the Posturchek is important. After removing the shoes the patient should be asked to take a few steps, stopping with feet in their normal standing position. In this manner the operator is able to set the platforms at the angle which will be most comfortable for the patient.

In placement with shoes on, it is important to see that no part of the shoe heel is ahead of the break between the heel and forward plates. The center of the toe of the shoe should be in line with the center plate except in the case of certain types of inflare lasts with a perfectly straight inner border. In all cases, the head of the third metatarsal should be directly over the center plate.

All Posturchek observations are made on either side of each of three plains: (1) Lateral, (2) anteroposterior, (3) torsional.

When the body is perfectly equilibrated, the lateral plane passes through the body from the base of the skull down through the center of the fifth lumbar joint and extends to a point midway between the ankles. With perfect weight distribution, each side of the lateral plane will carry 50 per cent of the total body weight.

The anteroposterior plane passes through the body from the lobe of the ear to the proximal end of the fifth metatarsal. Sixty per cent of the total weight should be carried posteriorly and 40 per cent anteriorly.

To detect torsion a plane is passed through the body at right angles to the lateral plane and observed from the vertical, as in looking down on the body. Normal weight distribution in the four sections of the body formed by the intersection of the anteroposterior and the lateral planes will show 30 per cent of the total body weight on each heel and 20 per cent on each forefoot. Any gross deviation from such percentages indicates torsion.

In the single total curvature case it is safe to assume that the mechanical error caused by a difference in leg length will result in excess weight being carried on the long side. The concentration of weight will be on the heel of the long leg. The shoulder will be low on the high hip side and usually the head tilt is toward the short side.

The short leg causes a shifting of the weight bearing points at the ankles, knees and hips, and the ordinary case will show a concentration of weight on the inner border of the long leg and toward the outer border of the short leg. In such cases the single total lift is used under the heel of the short side. The one-eighth inch lift is a good starting point and additional one-sixteenth inch lifts should be added until the short side assumes its portion of the total body weight. There is never an attempt made to overcome the actual metered structural error. Compensatory factors have changed all joint and muscle balance and the patient must be brought back into equilibrium gradually. Placing a lift under the short side will swing the pelvic area toward the midline and relieve the compression and extension on joint and muscle tissues.

Occasionally, the gravity load will be deflected to the short leg. This perhaps is the most difficult lateral problem inasmuch as it is ordinarily accompanied by gross scoliotic curvature. The mechanical error in such cases is so great that the patient is unable to get the bulk of the torso away from the short side. In these cases we also find the low shoulder and the low hip on the same side. The same procedure is followed in correcting this type of case as in the case of the long leg carrying the excess weight, that is, lifts are placed under the short side until part of the weight is transferred to the long leg. When the weight starts to shift to the long leg an inside wedge should be used under the long side. This will have a tendency to shift the hips to the long side, and relieve the short leg of its burden.

Occasionally a patient will show structural errors which should mean altered lateral equilibrium. However, when such patient is placed on the Posturchek he will show no marked imbalance. Nature has done a complete job of compensation and unless indicated by standing x-ray, there should be no attempt at changing the base planes.

The most ordinary case of altered anteroposterior equilibrium is found in women patients as a result of wearing shoes with high heels. Placing any sort of a lift under the high heels has a tendency to alter the anteroposterior weight distribution.

The human body has enough flexibility to accommodate a heel up to one and one-half inches high. This, however, takes place over a number of years evidenced by the continual process of raising the heel from nothing as a child to over three inches in some cases of adults.

During the heel raising process the Achilles tendon and muscle groups are shortened and the lumbar index is increased. The shifting of the weight forward throws abnormal stress on the plantar muscles and tendons and ordinarily distorts the transverse or metatarsal arch. In the average case one expects to find excess weight flowing to the great toe area when high heels are worn, and in some instances this marks the beginning of inner longitudinal arch strain as a result of constant inward rotation. In pes cavas tendencies, there will be an overconcentration of weight on the outer border of the foot except in those cases where the heel height has been excessive and great callused areas have developed under the great toe and small metatarsal heads. Excessive callused areas have the same effect on weight balancing as lifts, and should be removed before attempting to make a final correction in body balance.

The shoe is of primary consideration in any attempt to overcome an anteroposterior weight problem.

The heel must be lowered to a point where the anteroposterior plane is moved backward toward the heel. The Posturchek serves as the only aid in establishing the ideal heel height for any patient inasmuch as there is a point where the heel will carry a greater part of the weight. If this point is more than one and one-half inches from the floor, it is advisable to have the patient wear a heel one-eighth inch lower than the point where the heel accepts the greatest amount of weight. In doing this there is created a stretching action and eventually the heel can be lowered to the ideal height.

In most cases of inward rotation, both heels should be wedged slightly on the inside. The amount of wedging can be determined by the use of wedges provided. The foot is tipped toward the outside until the outer border is carrying slightly more weight than the inner or great toe area. If the patient will agree to wear a sensible shoe with a heel which is broad enough at the base to carry such wedging, rechecks and occasional treatment will show definite improvement in the ability of the foot to carry weight normally.

If the patient has been wearing sensible shoes and still has an anteroposterior problem with the majority of weight carried on the forefoot, then breast wedging should be used, and here again the ideal height can be determined through the use of accessory wedges placed straight across the front of the heel of the shoe. Lifts and wedges should be used as a means of getting the weight to flow in the direction of ideal distribution rather than to try to create a perfect reading immediately.

The asthenic slouch case will show a predominance of weight carried on the forefoot. Many times it is advisable to raise the heel of this type of body structure in order to force a slight lordosis in the lower back and increase weight on the heels. The asthenic slouch may be occasioned by flat feet and when the feet are restored to normal functioning, the anteroposterior plane will move back toward the heel. This condition too may be encouraged and definitely helped by the use of breast wedges.

A very ordinary anteroposterior problem is that of the pendulous abdomen, most frequent in men patients. Even though there is no difference in leg length the additional forward thrust of weight has a tendency to break down the feet. In many cases this type of altered equilibrium is accompanied by lordosis.

Breast wedging is used to tip the weight back and can only be used effectively on low medium height heels. The prescription should be identical on both shoes if there is no other posture problem.

Abdominal obesity with weight deflected posteriorly is rare and is usually accompanied by extreme soreness of the heels. The correction should consist of heavy felt pads cupped out in the center and placed inside the shoes. This has a tendency to tip the body forward and give the heel protection.

Torsion is detected by the failure of the two heels or the two anterior portions of the feet to maintain a constant relationship. The ordinary case of torsion will show a predominance of weight concentration on the heel of one foot and the anterior portion of the opposite foot. It is natural that torsion be found in the majority of cases where the mechanical error is great. In seeking a level or solid foundation, the compensating effect is that of twisting or torsion.

Since torsion with the weight on the long leg is accompanied by gross mechanical error, it is necessary to attempt a partial lateral correction before trying to overcome the torsion. In a great many cases the lateral correction alone will take the torsion out of the body. In the case of weight concentration on the long leg, it is well to try to make a lateral correction of one-eighth inch under the short side and then add a one-eighth inch breast wedge on the same side. This acts as a lift and a pry, forcing weight onto the heel of the short side.

The treatment of torsion in the case of concentration of weight on the heel of the short leg is different in that a total lift is used under the short side and a combination inside and breast wedging on the long side. Since the breast wedging and inside lift have a tendency to lengthen the already long leg, it is often necessary to add more lift to the short side when using the combination wedge.

SUMMARY

1. X-ray shows disease, fractures and some evidence of lateral imbalance but fails to show imbalance in the anteroposterior or torsional plane.

2. The Posturchek gives us all three planes with and without shoes. This is important because, as a rule, no two shoes of any one manufacturer will balance perfectly. We fail to take this into consideration by x-rays only.

3. The Posturchek actually shows us the amount of compensation in the body and allows us, with proper lifts and wedges, to maintian a physiologic balance. With x-ray we are never sure.

4. The actual metered or mathematical correction by the x-ray interpretation is not necessary and may cause considerable harm to the patient, even if only 50 per cent of the metered correction is used as we don't always get proper compensation.

5. All things considered, anyone can partially correct the uncomplicated case with some degree of accuracy but it remains to be seen why the complicated case does not respond properly. Often this is because the anteroposterior, lateral and torsional planes have not been corrected.

CONCLUSION

The path of factual science is ever widening although achievement is beset with many obstacles, prejudices, and criticisms. We should, however, be grateful for anything that brings us to quickened endeavor. There is so much to be done and to be learned in this field.

P.O. Box 105.

REFERENCES

Beckwith, C. G.: The Vertebral Joint Lesion—Etiology and Diagnosis. Jour. Am. Osteop. Assn., 1944 (Feb.) 43:263-270.

Downing, Carter H.: Orthodynamics of Posture. Jour. Am. Osteop. Assn., 1936 (May) 35:405-414.

Downing, Carter H.: Mechanical Interpretations of the Foot. Jour. Am. Osteop. Assn., 1937 (Oct.) 37:43-48.

Downing, Carter H.: Kinetic Disorders of the Pelvis. Jour. Am. Osteop. Assn., 1940 (Jan.) 39:235-239.

Roberts, Mr. C. A.: Shoes as Base Planes. Jour. Am. Osteop 1937 (Oct.) 37:48-50.

Painful Conditions of the Shoulder, with a Discussion of Chronic Adhesive Subacromial Bursitis (Frozen Shoulder)

H. N. TOSPON, D.O.
St. Joseph, Mo.

Before we delve into the causes, effects, and treatment of painful shoulder, it is well that we review briefly the anatomy of the shoulder joint. It includes the scapula, clavicle, and humerus, with certain muscles, ligaments, and tendons. Important ligaments in and around the shoulder are: Capsula articularis, labrum glenoidale, coracoclaviculare, and trapezoideum.

The head of the humerus sits in the glenoid cavity and is surrounded by the capsula articularis. Some of the important muscles are: Deltoid; coracobrachialis; biceps, long and short head; triceps; subscapularis; teres major and minor; latissiumus dorsi; supraspinatus; infraspinatus; trapezius; pectoralis major and minor. Since this paper was prepared a most excellent review of the application of anatomy to the regions of the neck, shoulder, and upper arm, appeared in THE JOURNAL OF THE A.O.A. for May, 1944. I recommend a study of this article.

Pain in the shoulder may be due to various causes ranging from osteopathic spinal joint lesions in the cervical and upper thoracic region to lumbosacral dysfunctions affecting the normal balance of the spine and thereby causing the shoulder to assume a strained position. Frequently pelvic imbalance results in shoulder pain through disturbance of the latissimus dorsi which originates partly from the iliac crest and has its insertion in the humerus. We must also remember that pain around the shoulder region on the left side may be caused reflexly from some abdominal or intrathoracic condition. Pain around the right shoulder blade may be due to duodenal or hepatic irritation. Other conditions which cause shoulder pain are: Fractures of the upper extremity of the humerus, the scapula, clavicle, or coracoid process; acute rheumatic fever; subacromial bursitis; brachial neuralgia, chronic osteoarthritis, periarticular arthritis, brucellosis, cholelithiasis, extramedullary tumors of the spinal cord in the cervical and thoracic regions, cancer of the breast with metastasis to the supraclavicular region, myositis, pleurisy, neoplasm of the shoulder region, lead poisoning, tuberculosis of the shoulder joint, fibrositis, gonorrheal arthritis.

The treatment for all of these conditions cannot be discussed here because of limited space, but we shall outline treatment for a few of the more common ones.

Osteopathic spinal joint lesions in the cervical and thoracic regions can cause undue tension of the shoulder, thereby restricting its normal blood and nerve supply. Frequently we find the clavicle in lesion at both ends. Acromioclavicular lesions are found to be associated particularly with fibrositis, subacromial bursitis or periarticular arthritis. In these cases there is often a history of a fall, which is not severe enough to dislocate or fracture the clavicle, but the patient complains of pain in the shoulder region around the acromioclavicular articulation. (Sometimes there is a history of fracture which has healed.) Upon careful examination a subluxation will be found which causes binding in the shoulder region when the patient attempts to raise his arm over his head. We find secondary lesions in the upper thoracic and cervical regions of the spine.

In reducing acromioclavicular lesions, I have the patient lie on the normal side, then place a pillow in the axilla on the affected side and try to keep the elbow slightly posterior to the mid-line of the body. With one hand grasping the distal end of the humerus directing it downward and backward, the other hand pushes the acromial end of the clavicle downward.

Sometimes the head of the radius is in lesion, causing trouble in the shoulder through abnormal muscle pull. As stated previously, lumbosacral dysfunctions upset the normal balance of the body. As a result the spine goes through various compensatory changes. The muscles and ligaments of the entire spine are affected and there is bound to be muscular and ligamentous strain somewhere in the shoulder region.

Fracture of the shoulder joint will not be discussed as it would take many pages to describe the various types and the methods of treatment. However, it is well to state here that x-ray examination should be made of all shoulders in which one suspects fracture.

The shoulder joint may be the site of severe pain and swelling in cases of acute rheumatic fever. Usually inflammation of the knee, ankle, wrist, and elbow precede shoulder joint infection. As is well known rheumatic fever usually has an abrupt onset with chills and fever. The temperature may range from 101 to 103 F., and the pulse 100 to 120 a minute. Other joints usually are involved. The disease tends to involve first one and then another joint. Leucocytosis is present and there may be some cardiac involvement. The treatment of acute rheumatic fever is to find the source of infection and remove it. One thing to remember is that the patient should be kept in bed until all symptoms disappear.

Brachial neuralgia causes an intense pain mainly in the shoulder, but it may extend down to the tips of the fingers. Usually the third and fifth fingers are affected and movement of the arm increases the pain. The duration of attacks varies from a few seconds up to many minutes and the frequency from two to three times a day to several in one hour. In such cases there may be history of toxicity, unusual worry, or rheumatic infection or dietary deficiencies. Quite commonly we find points along the nerves of the arm where paresthesias exist. Treatment is removal of the cause, application of heat, adjustment of osteopathic spinal joint lesions and rest.

Dislocations of the shoulder are very painful and are usually the result of a fall on an outstretched arm or hand. There is swelling, rigidity, echymosis, loss of function, flattening of the shoulder, a prominence of the acromial process, projection of the elbow, and inability to bring the arm to the side of the body. The shoulder should be x-rayed in these cases. An anesthetic is given, the dislocation reduced and the arm immobilized in the most comfortable position.

In acute synovitis there is a history of contusion, strain, or low-grade infection. Symptoms are hyperemia of the skin, swelling, increase in the size of the affected shoulder, swelling along the bicipital groove and in the axilla. There is considerable pain from the very beginning, increasing as the fluid accumulates in the synovial sac. This brings about a fixation of the joint by muscular contraction. Treatment is removal of the cause, rest, heat, and mild osteopathic manipulative treatment to the cervical and upper thoracic region of the spine. It may be necessary to aspirate some of the fluid.

In chronic synovitis there is usually a history of an acute attack. The chief symptom is stiffness, particularly in forced movements, such as placing the hand on the head. There may be a slight fullness about the joint, increasing as time goes on, a gradually increasing restriction of motion, and atrophy of the deltoid and scapular muscles. Treatment is to remove any focus of infection, and passive motion of the shoulder joint as much as possible without creating too much pain. Very thorough osteopathic manipulative treatment should be given throughout the cervical and upper thoracic region. These patients should be treated twice a day for a few days for best results. We must remember, however, that there may be permanent damage of the muscle structure which cannot be repaired.

Chronic pulmonary tuberculosis involves the apical pleura and rarely causes sharp pain, but it may manifest itself by soreness in the shoulder which is often regarded as rheumatic. Coughing is one of the first symptoms noticed by the patient. The coughing may be on awaking in the morning or intermittently throughout the day. As the disease progresses the cough becomes more and more severe. Treatment should be carried out as for most tuberculous cases.

Acute suppurative arthritis causes excruciating pain, tenderness, fixation of the joint, heat, and swelling. There is usually a history of an infected wound, pyemia, or some other severe infectious disease. It has an acute onset with chills, fever, and perhaps severe constitutional symptoms. The infection must be removed. The sulfa drugs have been found effective in such cases. The patient must be kept in bed. Osteopathic manipulative treatment is given to promote drainage; heat is applied to the affected area; and sweating the individual at various intervals is of value to rid him of toxic material.

In cases of cholelithiasis the pain originates in the gall-bladder region and radiates widely, frequently extending to the right shoulder. Pain is excruciating, accompanied by vomiting and sweating. Upon examination we find rigidity, pain and tenderness in the gall-bladder region. Treatment, of course, is directed to the gall-bladder.

Brucellosis is a disease which may cause periarticular arthritis of the shoulder. Brucellosis abortus vaccine has been found effective when all other forms of treatment have failed. Harris[2] mentions the case of a woman eighty years of age with osteoarthritis who responded to brucellosis abortus vaccine. According to this authority bursitis of the shoulder also responded to this vaccine when all other forms of treatment had failed. There is much more that could be said concerning brucellosis from an orthopedic standpoint, but space will not permit. I suggest that we keep this disease in mind as we search for causes of shoulder pain in our patients.

In chronic adhesive subacromial bursitis or "frozen shoulder" the patient exhibits loss of function of the extremity due to pronounced limitation of shoulder joint motion. This condition is relatively resistant to treatment. As a result of inflammatory exudate, fibrous tissue proliferation takes place in the periarticular tissues with hypertrophy of the synovial folds. The muscles surrounding and supporting the region, having been kept in a state of protracted spasm, develop contractures as a result of lessened elasticity and the invasion of fibrosis and fatty tissue in and around the muscle bundles. We have observed chronic adhesive subacromial bursitis with or without calcification in patients in the fifth and sixth decades. There may be a large number of patients in the younger age groups who exhibit calcium deposits in the roentgenograms of the shoulder.

It is believed that the basic factor in this disability is the presence of adhesions between the floor and the roof of the subacromial bursa and loss of the gliding function normally present there.

These patients frequently exhibit neuritic symptoms, especially pain radiating into the neck and back of the shoulder. These are not the result of a true neuritis, a term so frequently employed, but of bursitis. Lack of understanding of the basic cause has been responsible for much ineffective treatment.

Pain may be of long standing, but by the time the patient gets to the osteopathic physician after going the rounds of M.D. offices, the pain has often largely disappeared, leaving the shoulder with a marked limitation of motion. The duration of pain is important. If long-standing, there is atrophy of the musculature of the shoulder region to a greater or less degree. Some patients may also complain of pronounced loss of finger and other joint function. The hand is swollen and the appearance is that of atrophic arthritis. External rotation and lateral abduction of the shoulder is lost. Anteroposterior motion is usually normal. The patient can rotate the arm internally so that the forearm lies across the front of his body but can rarely pass his hand behind his back or even place it on his hip. Local points of tenderness over the shoulder are present. They are less acute and less localized than those exhibited by patients suffering from subacromial bursitis with calcification. When requested to abduct the arm the patient performs this motion by combination of scapulo-thoracic motion and lifting the entire shoulder high on the affected side while the other side is depressed.

On passive motion the humerus probably can be abducted laterally on an average of 15 to 20 degrees, if the patient is relaxed. At this point the scapula starts to move towards the axilla. If the scapula is

held firmly, further passive or active lateral abduction of the arm is not possible.

The roentgenograms in these cases of chronic adhesive subacromial bursitis consistently reveal generalized atrophy of the bones of the shoulder girdle and in some cases the degree of decalcificaton is pronounced.

The majority of patients with chronic adhesive subacromial bursitis give no history of trauma as an etiological factor or the type of injury described is hardly severe enough to cause a rupture of one of the short rotator tendons. The part focal infections play, in the opinion of some authorities, is not significant. On the basis of good hygiene all foci should be eliminated, but the results have not been encouraging. Chronic adhesive subacromial bursitis may result from some systemic situation that forbids shoulder joint function. The most notable examples are found in diseases of the central nervous system such as hemiplegia as reported by Dynes.[3] It has also been observed that marked loss of shoulder joint function due to adhesive bursitis that developed following a bilateral cataract operation was apparently the result of the patient's resting in bed over a considerable period.

MANAGEMENT OF PATIENTS WITH CHRONIC ADHESIVE SUBACROMIAL BURSITIS WITH OR WITHOUT CALCIFICATION

On admission, a thorough physical examination is made, roentgenograms are taken, and an analysis of the case is given. It is very important that the patient understands clearly the basis of his disability as well as the fact that it will require a minimum of three to four and sometimes as long as sixteen months to restore normal function to the shoulder. The actual extent of treatment will depend upon the degree of limitation of shoulder function and the willingness of the patient to cooperate. The amount of time necessary for results is again emphasized so that he will not become discouraged.

If the degree of limitation of motion is marked and the patient is suffering from considerable pain, he is advised to enter the hospital. He is placed in bed on a Balkan frame and the extremity suspended in the maximum degree of abduction. Adhesive traction, from six to eight pounds, is applied to the upper arm. Intensive heat is applied repeatedly to the shoulder together with massage. The patient is encouraged to move the arm in the apparatus as much as he can do so comfortably. He must be kept comfortable to secure as much relaxation as possible.

This form of treatment is carried out for three to seven days. Thirty to forty degrees of abduction may be obtained within this period. With the patient well adjusted to the apparatus, intensive active exercises of the shoulder are instituted. When the maximum degree of abduction has been reached, it is advisable to give a general anesthetic and carefully mobilize the joint. The arm should be grasped high upon the humerus so as to prevent fracture. When the manipulation starts the scapula should be immobilized by one hand while the other moves the humerus. Under careful manipulation numerous adhesions can be broken. If the shoulder joint is severely affected no attempt should be made in this first manipulation under anesthesia to put the arm through its full range of motion. If full range of motion were attempted the result would be great pain and discomfort and little would be accomplished. This should be left for a second attempt later. After the manipulation is completed, some operators[4] inject 1 per cent novocaine into the subacromial bursae as well as into the periarticular structure. This procedure gives some degree of comfort.

During the first twenty-four hours after the manipulation, no particular effort is made to have the patient move his arm unless he feels like doing so. The intensive heat treatment is continued and sedatives are given to control pain. Beginning on the second postoperative day, mild exercises are started and the patient will find usually that lateral abduction and rotation are greater than before the manipulation. Before the patient is released from the hospital he should be taught certain exercises that will be of great value to him.

One exercise is known as wall-climbing. The patient stands at arm's length from the wall with the fingers on the affected side touching the wall. He gradually "walks" his fingers up the wall as high as possible.

Another exercise is known as pendulum swinging. It is done with the patient standing in a flexed position swinging both arms at the side of the body forward and back as far as possible. A variation of this is to swing the arms laterally from the body and then medially, crossing them in front, touching each shoulder with the opposite hand.

Another exercise is taught in which the patient stands with arms outstretched laterally and the forearms flexed at a right angle. The forearms are then rotated down and up, down and up.

In treatment of chronic adhesive subacromial bursitis with calcification in the bursae or in the tendon of the short rotator muscle the foregoing program is used. The initial manipulation is done under the fluoroscope, using intravenous anesthesia. Some M.D. authorities pass needles into the area of calcification and attempt to wash out the calcification with normal saline. They report that this treatment has been very successful.

I believe that all foci of infection play an important role in these cases, and would certainly advise their removal. Patients under general anesthesia must be manipulated cautiously and heat applied continuously for a few days. Again I want to stress the need for osteopathic manipulative treatment to the cervical and thoracic regions of the spine and to the supraspinatus muscle. This treatment should be given once to twice daily after a patient has received manipulation under anesthesia. The exercises given are very important in the follow-up treatment.

411 Kirkpatrick Bldg.

REFERENCES

1. Cathie, Angus G.: Application of Anatomy to the Regions of the Neck, Shoulder, and Upper Arm. Jour. Am. Osteop. Assn., 1944 (May) 43:381-384.
2. Harris, Harold J.: Brucellosis (Undulant Fever) Clinical and Subclinical. Paul B. Hoeber, Inc., New York, 1941.
3. Dynes, J. B.: Subacromial Bursitis Associated with Diseases of the Nervous System. Lahey Clin. Bull., 1943 (Apr.) 3:124-127.
4. Leriche, R., and Policard, A.: Normal and Pathological Physiology of Bone: Its Problems. C. V. Mosby Co., St. Louis, 1928, p. 236.
Haggart, G. E., and Allen, H. A.: Painful Shoulder; Diagnosis and Treatment, with Particular Reference to Subacromial Bursitis. Surg. Clin. N. Amer., 1935 (Dec.) 15:1537-1560.
Key, John Albert, and Conwell, H. Earle: Management of Fractures and Dislocations. Ed. 3. C. V. Mosby Co., St. Louis, 1942.
Yater, Wallace Mason, and Barton, Wilfred M.: Symptom Diagnosis: Regional and General. D. Appleton-Century Co., Inc., New York, 1942.

The Treatment of Fractures of the Humerus By Means of the "Hanging Cast"

HAROLD E. CLYBOURNE, D.O.
Columbus, Ohio

In considering the treatment of fractures of the humerus, we must first understand the mechanics of the shoulder joint as well as the humerus. The shoulder is a ball and socket joint which permits movement in every direction. It is structurally weak in relation to its osseous and ligamentous components, but derives its strength from its strong supporting muscles which are arranged in the form of two cones.

The upper cone is composed of four muscles which attach to the tuberosities: the supraspinatus, infraspinatus, teres minor and subscapularis. The upper cone reinforces the capsule and helps to retain the head of the humerus in the glenoid cavity. The lower cone is formed by the muscles which insert distal to the tuberosities. They are the pectoralis major, latissimus dorsi and teres major. The lower cone of muscles moves the humerus.

The surgical neck of the humerus lies between the insertions of the two muscular cones. It is narrow and free from muscular attachment and is easily broken by indirect violence. Fractures of this region account for 2 or 3 per cent of all body fractures.

The shaft of the humerus is bounded above by the surgical neck and below by the flare of the condyles. It is divided into upper, middle and lower thirds. The middle third is the narrowest and the most susceptible to fracture. Fractures of the shaft of the humerus constitute 40 per cent of all body fractures.

Certain anatomical considerations of the humerus are responsible for special problems which arise in the treatment of fractures of this bone:

1. It is the most freely movable of all of the long bones of the body. It has movement in all directions and this movement is supplemented by motion of the scapula.

2. All stress is at an angle to its long axis, hence its action can be considered to be that of a lever.

3. When at rest while the individual is standing, the axis of the bone is in the vertical plane and is affected by gravity alone.

There are two methods of treatment of fractures which are accepted today. They are the reduction of the fragments with immobilization externally which must include the joints above and below the fracture, and the application of traction to the injured part, preferably in the position of relaxation. It has been found that anatomic reposition and rigid immobilization gave excellent results in certain types of fractures, but that they were not necessary in all types. It has also been found that fixation methods which fix a limb in an unnatural position or restrict normal joint function, may interfere with a successful end result.

Reduction and fixation of fractures of the head and shaft of the humerus are treated by many methods. Immobilization of the fractured ends may be secured by a plaster spica or cast, or the patient may be treated in bed with the arm in traction and abduction by means of the Thomas arm splint. If the fracture is not too severe, ambulatory devices for the treatment of fractures are the Jones humerus splint, the Magnuson abduction humerus splint, the airplane splint and many others. The chief drawback in the use of any of these splints is that the patient, even if ambulatory, cannot be properly clothed and is in such an awkward position that he cannot go about his regular routine.

In 1933, Caldwell[1] first recommended the hanging cast as the ambulatory method best suited for the treatment of fractures of the shaft and surgical neck of the humerus. This treatment not only resulted in a great reduction in the number of days of hospitalization for such cases but also placed many of these cases in the category of office treatment since no general anesthesia was needed for the reduction of the fracture and application of the cast.

Fractures of the humerus considered unsuitable for treatment by the hanging plaster cast are those which involve the condyles or the supracondylar area, badly comminuted fractures of the head with poor position of the fragments, those of the head and neck associated with dislocation at the shoulder joint, and fractures of the greater tuberosity with displacement.

Compound fractures are débrided thoroughly and closed, then treated as a closed fracture with application of cast. Patients requiring relaxation for the reduction of displaced fractures of the neck are given a preliminary dose of Nembutal grains 1½, after which 10 to 20 cc. of 1 per cent procaine hydrochloride is injected into the hematoma of the fracture. After the procaine has had an opportunity to take hold, the fragments are manipulated and the patient is ready for the application of the cast.

With the patient sitting on a stool, an assistant holds the injured hand and forearm so that the elbow is flexed at right angles. In the case of heavy individuals the elbow should be bent only to approximately 60 degrees. The forearm is held at mid-pronation.

The cast is applied with the humerus hanging vertically in order to correct the deformity and angulation. The arm is covered with snug fitting stockinette. A strip of felt is placed round the wrist proximal to the ulnar styloid process for protection from the pressure of the sling.

The plaster is applied in a circular manner extending up as high as possible on the humerus compatible with comfort. It extends down to the wrist or, if desired, can include a portion of the hand. Care must be taken to be sure that the cast is not too heavy. A gauze or wire loop is incorporated into the cast at the wrist, to which to fasten the sling. This loop can be applied either medial or lateral to the mid-line of the upper surface of the cast to help in the correction of inward or outward angulation of the lower fragment. The farther toward the hand the sling is applied the greater the pull of the cast on the humerus.

The length of the sling is such as to allow the humerus to hang vertically with the hand higher than the elbow.

Lateral angulation can readily be corrected by a wedge made of felt, plaster or sheet cotton covered with plaster and placed on the inner side of the elbow.

The patient is warned not to allow the arm to rest on chairs or tables and to sleep in a semi-reclining position with a pillow behind the arm for the first week. Position of the fragments should be checked in a week by x-ray with the patient in a sitting or standing position. Angulation can be corrected by the length of the sling. Checkup x-rays are then made at intervals of every two weeks.

Circumduction exercises are encouraged from the start, cautiously at first, but after a week swinging the arm freely from the shoulder. This is continued throughout the period of treatment so that limitation of shoulder motion and atrophy of the deltoid muscle are absent or at a minimum.

The average length of time that the cast is left on the patient is dependent upon the callus formation found in the subsequent x-ray examinations. This will range from four to fourteen weeks with the average time being approximately six and one-half weeks.

The following "Do Nots" suggested by Griswold, Hucherson and Strode[2] cover the subject so well that I use them verbatim:

"Do not worry about pain and crepitation the first week.

"Do not worry that the fragments move.

"Do not allow the patient to disturb the length of the support.

"Do not apply too heavy a cast.

"Do not neglect to see that the humerus hangs vertically.

"Do not fail to make the patient ambulatory.

"Do not allow the patient to attach the cast to the body or to wear a sling.

"Do not fail to start circumduction exercises of the shoulder after one week.

"Do not fail to check with the x-ray after one week.

"Do not expect the cast to reduce fractures of the surgical neck."

REFERENCES

1. Caldwell, John A.: Treatment of Fractures of Shaft of Humerus by Hanging Cast. Surg., Gynec., and Obstet., 1940 (Feb. 15) 70:421-425.

2. Griswold, R. A.; Hutcherson, D. C., and Strode, E. C.: Fractures of the Humerus Treated by the Hanging Cast. Southern Med. Jour., 1941 (July) 34:777-778.

Anderson, Roger: Fractures of the Humerus—a Functional Method of Treatment. Surg., Gynec., and Obstet., 1937 (May) 67:919-926.

Gurd, F. B.: A Simple Effective Method for the Treatment of Fractures of the Upper Two-Thirds of the Humerus. Am. Jour. Surg., 1940 (Feb.) 47:443-453.

Hudson, R. T.: The Use of the Hanging Cast in the Treatment of Fractures of the Humerus. Southern Surgeon, 1941 (Feb.) 10:132-134.

La Ferte, A. D., and Nutter, P. D.: The Treatment of Fractures of the Humerus by Means of the Hanging Cast. Ann. Surg. 1941 (Nov.) 114:919-930.

Winfield, J. M.; Miller, H., and La Ferte, A. D.: Evaluation of the Hanging Cast as a Method of Treating Fractures of the Humerus. Am. Jour. Surg., 1942 (Feb.) 55:228-249.

Wright, A. W.; Koenig, J. A., and Shafiroff, B.: The Extension Hanging Cast for Fractures of the Humerus. Mil. Surgeon, 1941 (May) 88:542-545.

The Use of the Navy Traction Apparatus in the Reduction of Fractures About the Wrist

HAROLD E. CLYBOURNE, D.O.
Columbus, Ohio

Fractures about the wrist joint have always been a source of worry not only to the general practitioner, but also to the orthopedic specialist. Of this group of fractures, Colles' is perhaps the most frequent offender. It is said to rank next to fractures of the fingers, ribs and clavicle as the most frequent of all fractures. Because of its frequency and the generally poor results obtained from improper handling, we will consider this one type while discussing the use of the traction apparatus.

A Colles' fracture is one occurring within an inch to one inch of the distal end of the radius. It is an extension and compression type of fracture, very common among adults but rather unusual among children. The most common cause is a fall upon the outstretched hand.

Colles' fractures are classified as extra- and intra-articular, greenstick, comminuted, impacted, simple and compound.

Before undertaking the reduction and treatment of any fracture around the wrist joint the following facts should be known and remembered:

1. The radius is normally one inch longer than the ulna.

2. In the anteroposterior view, the articular surface of the radius slopes from its styloid process proximally toward the ulna, creating an angle of about 25 degrees.

3. In the lateral view, the plane of the articular surface faces forward and volarward at an angle of approximately 15 degrees. This is called the angle of articulation. This angle is very important to the function of the wrist joint.

Diagnosis of Colles' Fracture.—A Colles' fracture is definitely suggested by the history of a fall on the outstretched hand which causes pain and loss of function of the wrist, tenderness over the end of the radius, swelling and shortening of the radius as well as broadening of the wrist. The following characteristics are presented:

1. A fracture of the distal end of the radius within one inch of the articular surface and frequently a fracture of the ulnar styloid process.

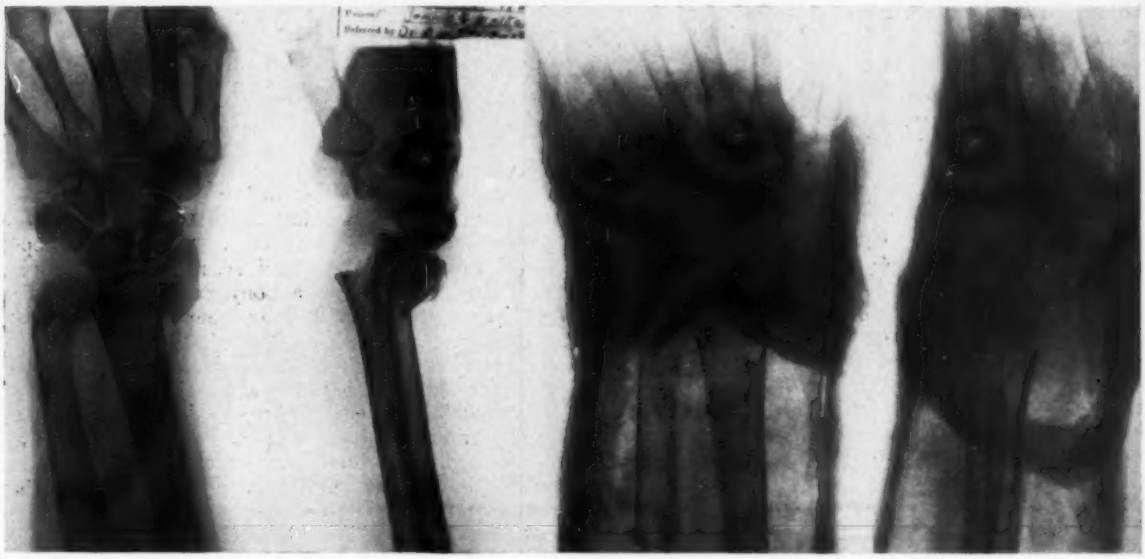
2. Involvement of the whole thickness of the distal shaft of the radius with possible fragmentation of its articular surface.

3. Backward displacement of the distal radial fragment with or without impaction into the lower end of the proximal fragment.

4. Radial displacement of the distal fragment.

5. Changes in the positions of the fragments producing a reversal of the articular angles and the characteristic silver-fork deformity.

(*a*) The articular surface on the distal end of the radius now faces down and back-



Case 1.—Typical Colles' silver-fork deformity in female, aged 68 years, before and after the application of traction of 15 pounds for fifteen minutes.

ward instead of down and forward.

(*b*) In the anteroposterior view, the slope from the tip of the styloid process toward the ulna may be completely reversed.

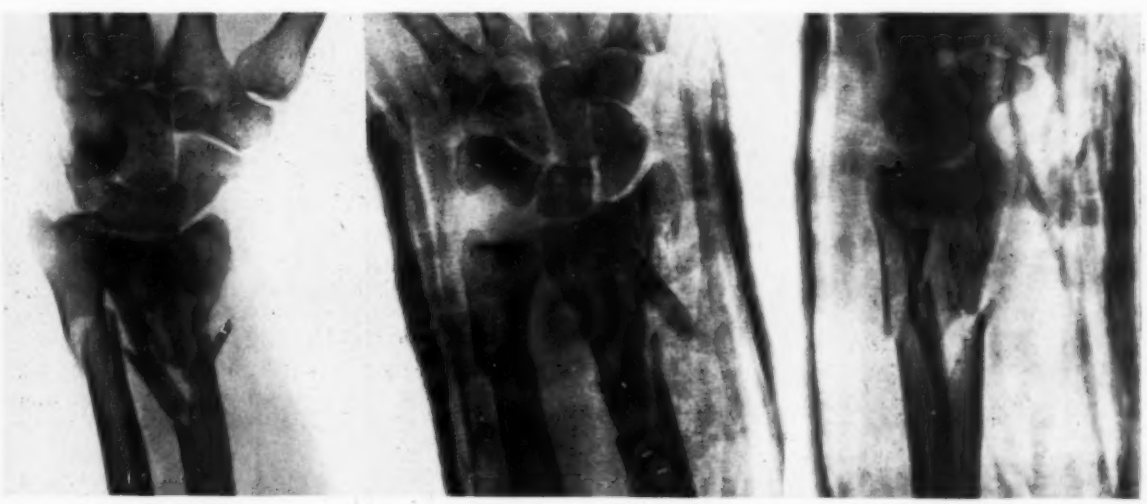
(*c*) If there is an impaction or marked displacement, the radius may be shorter than the ulna.

Treatment.—Under treatment we will first consider the standard, accepted method and then the Navy traction method.

The Reduction Must be Perfect. Examination should show that the distal end of the radial styloid is now one-fourth to one-half inch distal to the ulnar styloid. A lateral film should show that a line drawn between the posterior and anterior margins of the distal end of the radius slopes down and forward.

If the Colles' fracture is not completely reduced and immobilized until after solid bony union has taken place, healing in malposition may cause a weak wrist, gross deformity, limited motion, tenosynovitis, ulnar instability and pain because of rupture of the triangular fibrocartilage of the radioulnar articulation.

Reduction by Standard Method.—This is done preferably under local anesthesia. Inject approximately 10 cc. of 2 per cent procaine into the hematoma through the dorsum of the wrist. Give the anesthetic 10 minutes to take effect and then grasp the hand as though shaking hands while an assistant grasps the arm at the elbow. Break up the impaction and force the hand backward while exerting traction and countertraction. Then after applying direct traction, force the hand downward and ulnarward. The distal radial fragment must be restored to position by pushing it volarward and toward the ulna. Anterior and posterior molded plaster splints are then applied and



Case 2.—Badly comminuted Colles' fracture with silver-fork deformity, male, aged 65 years, before and after application to traction of 15 pounds for fifteen minutes. Reduction was automatic, the forearm not being manipulated.

bound together with a gauze bandage or by an Ace bandage.

Reduction by the Navy Traction Apparatus.—The use of this apparatus is based upon the principles of traction in which the extremities must first be so positioned that all muscles involved — extensors, flexors, rotators—are in physiological equilibrium. Continuous fixed traction is then applied and checked through a scale. Fifteen pounds of traction is maintained for fifteen minutes without touching the arm. It has been found that this amount of traction for this period of time is sufficient to tire the muscles completely so that a "hollow muscle tube" results, with equal tension on all sides of the bone. Many times x-ray examination will show that all of the fragments have moved back into normal position without any outside help. If they have not, slight pressure will suffice to do this.

Technic of Application of Navy Traction Apparatus.—With the patient supine,

1. Either 1 per cent procaine injected into the hematoma or one-fourth grain of morphine sulphate intramuscularly can be used. Sufficient time must be given for the drug to take effect before proceeding to the next stage.

2. The arm is then abducted 90 degrees from the body, the elbow at 90 degrees from the upper arm. The upper arm is fastened to the wall by a canvas sling and rope. The sling is spread so as to cause no interference with circulation. The forearm is placed in pronation and finger traps on a spreader bar are applied to the thumb and fingers of the injured arm. Traction is gradually applied until the pull reaches fifteen pounds. The traction is applied in ulnar deviation for fifteen minutes after which check up films are made in two planes. It has been found in most cases that all of the fragments will have become disimpacted and will have fallen back into their normal position. Occasionally it is necessary to mold the fragments into position.

Anterior and posterior molded splints are then applied and secured in position by a light layer of roller plaster. Traction is maintained until the cast has hardened after which it is gradually loosened and removed. The following day check up films are made.

I have found that this method is also very effective in the reduction of dislocated carpal bones, such as the semilunar and scaphoid. I have also used it in the reduction of fractures of both bones of the forearm with overriding. Our results with this type of treatment for wrist fractures at Doctors Hospital have been much better than with the old method and I feel that we can highly recommend its use.

REFERENCES

Compere, Edward S., and Banks, Sam W.: Pictorial Handbook of Fracture Treatment. Year Book Publishers, Chicago, 1943.

De Brun, Harry C. W. S.: Manual of Fractures, Dislocations and Epiphyseal Separations. Year Book Publishers, Chicago, 1939.

Geckeler, Edwin O.: Fractures and Dislocations for Practitioners. Ed. 3. Williams & Wilkins, Baltimore, 1943.

Joldersma, R. D.: Traction Reduction of Fractures About Wrist. Surg. Clin. N. America, Philadelphia Number, December, 1943. W. B. Saunders Co., Philadelphia.

Key, John Albert, and Conwell, H. Earle: Management of Fractures, Dislocations, and Sprains. Ed. 3. C. V. Mosby Co., St. Louis, 1942.

Evaluation of Hip Fractures

J. PAUL LEONARD, D.O.
Detroit, Mich.

In evaluating the present-day management of hip fractures, it is interesting to note that during the last century statistics show that the percentage of nonunion has been reduced from nearly 100 to a conservative 15 to 20 per cent. Sir Ashley Cooper stated in 1822 that he had seen only one femoral neck fracture heal by a bony union. During this very early period, the only treatment used was sandbags. Later traction was added and a higher percentage of bony unions was obtained. These methods of treatment continued until around 1915 when Royal Whitman introduced the use of plaster spica, either single or double but usually double, with the injured thigh being held in complete abduction. This technic was a vast improvement over any up to that time, because it allowed the patient to be turned from side to side and to be elevated in bed. This method decreased the incidence of mortality materially and increased the percentage of bony union from around 30 to 60 per cent.

In 1929 the American Orthopedic Association set the average percentage of bony union at 50.4 with a mortality rate of 28.6 per cent. In 1931 Smith-Petersen instituted a practical method for the internal fixation of femoral neck fractures, when he reported his technic for using the well-known three-flanged nail bearing his name. Since that time many modifications of technic have been developed. Our time will not permit us to discuss them all, but later I will refer briefly to a few of them.

Leydig[1] says, "The Smith-Petersen nail has increased bony union to 89.4 per cent in patients who survive and has cut the hospital days per case to almost one-fourth of that which it had been previously." He refers to a mortality rate of 17.2 per cent.

Fractures of the femoral neck, by their location, are divided into two basic types:

1. Intracapsular, which includes the high and mid-cervical fractures.

2. Extracapsular or trochanteric fractures which may or may not include the low cervical depending upon their exact location.

We have chosen to confine our remarks to the cervical neck fractures, but the trochanteric types are equally as interesting. These cervical neck fractures can be classified into (1) abduction and (2) adduction fractures.

The abduction or impacted fracture is one in which the head is impacted into the neck. In abduction, weight-bearing drives the head of the femur further into the neck at the fracture line.

The adduction fracture usually is located in mid-cervical or low-cervical position and is one in which the head is by weight-bearing forced away from the distal fragment.

I have included in my series of slides an x-ray of a case which was reported by Dr. V. L. Hart[2] of the University of Minnesota Medical School, in which these two types of fractures occurred in the same

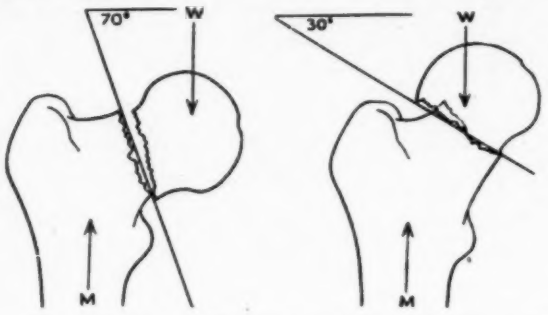


Fig. 1.—Showing the difference in angulation of the fracture line in femoral cervical neck fractures: Left, abduction fracture; right, adduction fracture.

patient. The treatment for each of the two is entirely different. The abduction fracture requires no treatment, except rest. The adduction fracture is the more common type and as to general considerations and types of therapy is not different from fractures in any other location, namely:

1. The bone ends must be replaced or reduced sufficiently to bring about bony union.

2. The fragments must be immobilized until bony union has occurred.

3. The joint adjacent to the fracture must be allowed free range of motion. (This point is now possible since internal fixation technic has been devised.)

The hydrogen-ion concentration at the site of the fracture is on the acid side for a period of about two weeks during which time a decalcifying process takes place. After this two weeks period, the pH changes to alkaline and recalcification starts. This, of course, is the first step in bony union. If reduction of the fracture has been completed and immobilization technic instituted, the process should start which will ultimately end in bony union.

In the anatomy of the cervical neck, we know that the head of the femur and most of the cervical neck are intracapsular and that the greater part of the blood supply is derived from the vessels of the neck. The remainder of the blood supply is furnished through the ligamentum teres. Thus the closer the fracture is to the femoral head the more possibility there is for destruction of the blood supply to the proximal fragment, and particularly so if the ligamentum teres is torn.

Albee,[3] in a recent article, reports that it has been his custom always to check the condition of the ligamentum teres at the time of operation, and it was found that in 444 out of 447 cases it had been injured and also that there was not the slightest evidence of bleeding at the cotyloid notch where the ligamentum teres is inserted. Albee further states that he believes that rotation of the femoral head tears the ligamentum teres and this is brought about by a concerted spasmodic contraction of two powerful groups of muscles as follows: The abductors of the hip pull mesially upon their osseous insertions with the greater trochanter holding the fracture surfaces of both capital and distal fragments together somewhat like the cogs of a wheel. The more powerful muscles of the thigh force the distal femoral fragment upward, thus rotating the fracture end of the spherical capital fragment upward and the fovea side of the head fragment downward, in this way tearing or evulsing the ligamentum teres.

Davis[4] states that it requires only about 30 pounds of pressure to rupture the ligamentum teres. Albee[3] continues his observations of these 447 cases by stating that the weak ligamentum teres was destroyed by torsion rotation at the time of fracture and when this occurs the capsular fragment becomes practically a "joint mouse". He further states that this is the predisposing consideration of so-called "deadheads" and of aseptic necrosis.

The patient should be carefully studied, both the fracture and the general constitutional condition, before determining which therapy should be followed. Also it is generally reported that patients have been pinned successfully at all ages, even to 92 years of age. If conservative therapy is chosen, the use of the Jones splints or the Roger Anderson well-leg splint is our standard procedure. In both of these the normal leg is used to immobilize the injured member. Excellent results can be obtained by the proper use of the more conservative procedures. It should always be borne in mind that either Leadbetter or Whitman reduction technic should be used immediately preceding the application of splint and checked with x-ray at the time immobilization is applied.

There are a few men who prefer to reduce the fracture and to immobilize with a single or double spica, cutting a large window over the greater trochanter on the injured side, and then at a later date taking the patient into the operating room and applying internal fixation. Their reason for following this procedure is that there is less danger of bone fragments being disturbed at the time of operation if supported with a plaster jacket. One of these men describes a very interesting technic in which with a modification of Roger Anderson well-leg traction apparatus and with the use of 20 to 50 pounds traction over a period of at least twelve hours, he is able to bring about a reduction of the fracture. Then, while the traction is still in force he uses a plaster-of-Paris spica, and at a later date internal fixation.

Earlier I said that I would take up briefly a few of the many modifications and new technics devised since the Smith-Petersen nail came into use.

Austin T. Moore's pins[5] were reported in 1937. They consist of three small stainless steel pins individually inserted into the trochanter through the cervical neck into the femoral head and held secure with wire at the point of insertion. The theory is that by the use of these nails, weight-bearing will force the proximal fragments further into the femoral neck and thus encourage union.

Among the modifications of the Smith-Petersen nail is an ingenious fixation device reported by Morrison.[6] It is extremely clever in that it causes the internal end of the screw, when inserted over the guide wire into the head of the femur, to open like a small umbrella inside the capsular fragment, thus insuring firm fixation.

Another modification makes use of teeth, similar to those in a saw, put in the three-flanges, and when the nail is inserted it carries cells from the periosteum, cortex, and the medullary canal through the fracture line, thus further stimulating recalcification. This modification was reported by Gibson and Arnold.[7]

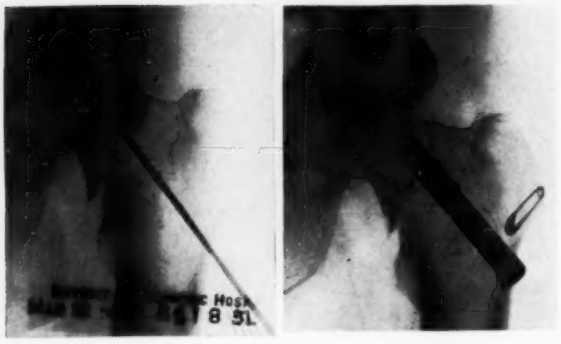


Fig. 2.—Left: cervical neck fracture with a guide pin inserted. Right: the same fracture with the Smith-Petersen nail in place.

The use of many indicators and guides for the proper insertion of pins has been reported from time to time by various orthopedists. We have used for many years the Engel May direction finder.

Many doctors are acquainted with the Davidson nail finder which needs no comment, other than to state that it is an accurate method of nailing the hip, but the device is not usable with Lorenz Lagg screws.

In a recent publication, the Crecca-Cetrulo guide[8] was announced. It consists of a calibrated axle pivoting on protracted adjustable pointers which are adjacent to the internal support pin, and a T-shaped part which aids in locating the proper point for insertion of the pin and direction in which it is driven.

These are just a few of the many appliances used for the guidance of the Smith-Petersen pin. I am sure that in various individual hands all technics are usable. It is a matter of becoming acquainted with whatever technic appeals to each individual and following it in detail in order that the best results may be had.

It is our opinion that the introduction of the Lagg screw was an improvement over the three-flanged nail in that a screw would draw the bone fragments closer together and there would be less opportunity of slipping of the fragments at a later date.

Although the Lagg screw, theoretically, would not prevent some rotation of the femoral head, this objection has been overcome by the very recent technic of Johnson[9] in which he combines the principle of the Lagg screw with that of the Smith-Petersen pin. The Johnson screw is inserted. This screw has a channel from end to end which allows it to follow the guide wire freely and also has a slot from end to end for the reception of a key which is the same length as the screw. When it is inserted it serves the same function as one flange of a Smith-Petersen pin, thus preventing any rotation of the femoral head.

It is interesting to review the end results of cervical neck fractures treated by internal fixation, and I quote from a summary of 110 cases reported by Corothers and Giannestras:[10]

END RESULTS OF FRACTURES OF THE CERVICAL NECK OF THE FEMUR[10]

	Number	Per cent
Firm bony union	59	53.63
Union forming when last x-rayed	9	8.18
Excellent clinical results without x-ray checkup	26	23.63
Nonunion	16	14.54
Total	110	

Reducing this analysis to the bony union and nonunion percentage would give the following:

Bony union	59	78.66%
Nonunion	16	21.34
Total	75	100.00%

The second summary is reported by Lucas and Varney[11] of forty-four cases:

	Cases	Per cent	Average Age
Cervical fractures expired	20	19.81	75.2
Cervical fractures recovered	24	23.76	63.1

Among the causes of death are bronchopneumonia or hypostatic pneumonia, which accounted for 70 per cent of the deaths. Cardiac failure, cerebral vascular accident, insanity and erysipelas accounted for the remaining 30 per cent.

It can be concluded from these figures that about 50 per cent of those patients with cervical fracture expire while in the hospital and that the older the patient the less chance he has to survive, pneumonia being the primary cause of death.

It can be readily seen that serious thought must be given to the reasons for aseptic necrosis of the head of the femur, if a higher percentage of satisfactory results is to be obtained. Considerable work has been done on this subject by Compere and Wallace[12] in which they discuss at length the reasons for necrosis and why many femoral heads become necrotic after bony union has taken place, often several years after the date of the fracture.

Santos[13] studied ten femoral heads obtained by operation or necropsy following intracapsular fractures, and reported that seven were necrotic and three viable. Of the seven with necrosis one had been treated by open reduction and insertion of a beef-bone peg, followed by the application of plaster casts. The remaining six patients had been treated with the more conservative technic of Whitman casts or straight traction.

Phemister,[14] reporting on the fate of the femoral heads in 49 cases states, "Necrosis occurred in 32, while in 17 the head survived. There was union of the fracture in 4 of the cases with necrosis of the head. In 17 of the 49 cases, specimens obtained from 15 days to 4½ years after injury were studied microscopically. Partial to complete necrosis was found in 12."

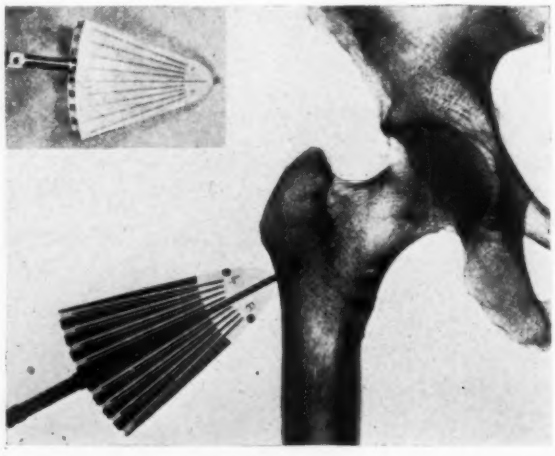


Fig. 3.—Engel-May direction finder.

Compere and Wallace[12] offer the opinion that faulty management of some of these fractures may have been contributing factors to the high incidence of aseptic necrosis.

Cleveland and Bosworth[15] reported the union of 19 out of 48 cervical neck fractures following external fixation, and Santos[13] found that 5 out of 7 femoral heads, removed from hips in which there were old ununited fractures of the femoral neck, were necrotic.

These interesting surveys cannot help but bring up the question "Would necrosis result in nonunion, or were inadequate reduction or poor immobilization factors the cause of the high percentage of dead heads?" It is an established fact that the disruption of the blood supply to the head of the femur is the primary cause of necrosis. This disruption can be brought about at the time of the fracture or following the fracture if proper immobilization technic is not used following reduction. A complete transcervical fracture may rupture the anterior and posterior capsular vessels, which are branches of the circumflex femoral artery. It is further stated that the arterial supply of blood to the ligamentum teres supplies a relatively small area of the femoral head, which undoubtedly is the reason why sufficient blood is often lacking following cervical neck fractures where the capsular blood supply has been disrupted.

Pauwels[16] emphasizes in his writings the necessity of relieving as much of the sheering stress as possible at the point of fracture and recommends a moderate coxa valga position, followed, of course, with internal fixation by metal pins, screws, nails and so forth.

The Fracture Committee of the American Academy of Orthopedic Surgeons states that 70 per cent of cases properly reduced and properly immobilized result in firm bony union; but of 157 cases with bony union it was found by this Committee that 17.8 per cent showed degenerative changes in the head of the femur.

Phemister[14] believes that the fate of the head is determined at the time fracture occurs and depends almost entirely upon the amount of tearing of the capsular blood vessels. He further states that he believes that the relative decrease in the incidence of aseptic necrosis following immediate reduction of the fracture and pinning of the fracture must result from the fact that some of the posterior capsule with its blood vessels remains intact when the neck is fractured. Thus it can be readily seen that if these fractures are not reduced and immobilized there is more possibility of ruining the remaining proximal fragment by further injury to these blood vessels, if continued motion is allowed over any period of time.

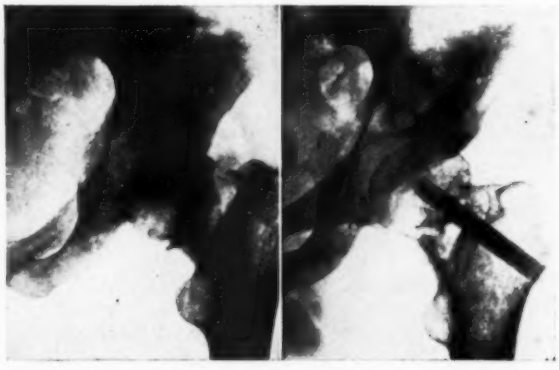


Fig. 4.—Left: cervical neck fracture showing moderate necrosis of the neck. Right: the same case after tibial bone peg was inserted.

Fig. 5.—Illustrating the end results of aseptic necrosis following fracture—complete absorption of the cervical neck (right) due to nonunion.

Multiple minor trauma will further injure this partial blood supply. Aseptic necrosis has been observed in young adults following reduction, and also in congenital dislocations of the hip; it has been found in association with coxa plana that results in Legg-Perthes disease and in cases of congenital inadequate acetabulae. Freund[17] reports the experimental production of osteochondritis dessicans (which is a localized aseptic necrosis) by a multiple minor trauma.

Although it is difficult to prove, it does seem reasonable to assume that in some cases following fracture the femoral head may survive even without sufficient blood supply to maintain a healthy condition; merely enough blood being obtainable to maintain viability, thus developing a condition which will not stand the stress and strain of weight-bearing.

It can be concluded from these facts that in order to reduce the incidence of aseptic necrosis to as low a percentage as possible, reduction must be done and satisfactory immobilization secured early. This work should be done preferably within two weeks following fracture although the earlier it is completed, the more we protect an already faulty blood supply to the proximal bony fragment.

It is stated by Albee[3] that as soon as aseptic necrosis can be recognized by x-ray a more radical procedure should be followed. There are several technics available for repairing this type of fracture after aseptic necrosis is established. It is obvious that it will be necessary to remove all foreign matter such as pins, Lagg screws and so forth, and follow whatever procedure seems best suited for each individual case. The following are standard:

1. Osteosynthesis or bone graft
2. Reconstruction of the hip joint
3. Trochanteric osteotomy.

The object of this procedure, of course, is to relieve pain, establish sufficient stability for ordinary weight-bearing, and secure a fair range of motion.

The general condition of the patient must be taken into consideration since most of these individuals are 60 years of age and over and a careful analysis must be made of the exact condition of the hip before the appropriate technic can be chosen. The following items must be checked:

1. The length of time since the original fracture
2. The viability or nonviability of the head
3. The extent of absorption of the neck
4. The amount of upward displacement of the trochanter.

Thus the prospect of securing even a fairly accurate anatomical restoration becomes less favorable as nonunion continues and aseptic necrosis increases.

Osteosynthesis is the method of choice, but can be used only where there is a relatively small amount of absorption and atrophy of the head and neck; a viable head is necessary, also a relatively small upper displacement of the trochanter. Less than 10 per cent of the cases of nonunion present this picture, usually because the condition has been allowed to continue over too long a period before decision to use more radical procedure is made. If an early diagnosis of aseptic necrosis can be made, and osteosynthesis technic is indicated and can be used, it is highly recommended as the procedure of first choice.

Albee[18] in his book on bone graft surgery discusses the advantage of this technic at length. It consists of an osteogenous bone peg through the trochanter and the neck and into the head. The percentage of bony union is reported to be between 60 and 70 although in about 25 per cent of these cases osteoarthritis develops which partially impairs the function.

The reconstruction operation is indicated where there is a nonviable head and where the absorption of the neck has progressed to a point far beyond where it is advisable to use a bone peg. Among the reconstruction operations are the well-known Albee and Whitman procedures which have proved successful over a period of years. The Hibbs procedure is listed in this group, but it has resulted in a weak hip without stability and with a tendency towards spontaneous dislocation of the trochanter from the acetabulum.

With these operations, of course, the capsule is opened and the nonviable head and the necrotic material is removed. It is recorded that approximately good or fair results can be expected from reconstructive operations, although displacement of the neck of the trochanter from the acetabulum and a general weakness of the gluteal muscles and a hip limp are not uncommon results. Arthritic changes in the joint often cause considerable postoperative pain. Not infrequently painful knock knee deformity develops along with the hip limp as a result of altered weight-bearing at the new joint. As a whole, the best result which can be obtained from reconstruction operations is not as satisfactory as that obtained with the usual osteotomies or bone peg operations.

The types of trochanteric osteotomies employed for ununited fractures are:

1. The high, or intertrochanteric osteotomy
2. The low, or Shanz osteotomy.

The first is carried out just above the level of the lesser tubercle and the second through the shaft of the femur below the lesser tubercle approximately at the level of the ischium. The mechanical advantages gained by trochanteric osteotomy can be listed as follows:

1. The weight-bearing pedestal is shifted into the weight-bearing line of the body beneath the sacroiliac joint and the head of the femur.

2. The shearing force at the fracture site is reduced by diminishing the angle of inclination between the surfaces of the head and neck. That is to say, the fracture line approaches a more horizontal than vertical position.

3. Then following osteotomy, the position of the greater trochanter and the normal leverage action of the gluteal muscles are preserved.

It might be well to consider for a moment the respective indications for osteotomy and for reconstruction. Generally speaking, osteotomy is preferable to reconstruction operation for the following reasons:

1. The operation is simpler and safer for these patients are mostly well advanced in years.

2. The mechanics of osteotomy more closely restore anatomic weight-bearing in the hip than reconstruction.

3. Subsequent displacement and loss of support are less likely.

4. Function, with osteotomy, surpasses that of the best reconstruction and approximates that of osteosynthesis or bone graft operation.

5. The number of good or fair results is higher in osteotomy, being about 80 per cent.

Osteotomies are contraindicated when:

1. The requirements are suitable for bone graft operation.

2. If the fracture is of long duration and there is a short absorbed neck and extreme lateral and upward displacement of the trochanter; then the modified Albee reconstruction is preferable.

3. In the presence of an obviously necrotic head with osteoarthritis of excessive degree.

Usually the high osteotomy is preferable to the low in that:

1. The lower fragment is more easily placed and held in proper position.

2. The distal fragment is in contact with the head which tends to prevent instability from anteversion of the neck.

3. There is less danger of increased shortening from displacement or overriding of the fragments.

4. Contact of the shaft with the head and neck fragments may possibly promote union among all three which is the ideal end result.

Recently there has been developed an internal fixation apparatus to be used in osteotomies which greatly aids in stabilizing the fracture during the period of healing and lessens the length of time that plaster spicas are needed. In some cases where good internal fixation can be accomplished, it eliminates the use of plaster, thus increasing the possibility of a good functional joint. Neufeld's[19] internal fixation pins and plaster are the latest of these apparatus.

SUMMARY

Some of the clinical considerations and therapeutic procedures of cervical neck fractures have been outlined, and the complications arising from the improper handling of this major orthopedic problem discussed.

It was emphasized that proper analysis, proper and speedy reduction, proper fixation, are all necessary in order to reduce the incidence of aseptic necrosis.

Radical cervical neck procedures should be instituted as early as possible when the diagnosis of aseptic necrosis has been made.

(References on page 522)

Differential Consideration of the More Common Injuries to the Vertebral Column

HARRY F. SCHAFFER, D.O.
Detroit, Mich.

The earliest known reference to injuries to the vertebral column appear in the Edwin Smith papyrus, which is believed to date from about the seventeenth century B.C. This document contains the records of six cases (numbers 28 to 33) of injury to the spinal column, in two of which were presented symptoms referable to the spinal cord. Prior to the purchase of this papyrus by Smith at Thebes in 1862, the earliest known references to such injuries are said to be contained in what are called the works of Hippocrates, about 400 B.C., and in those of Celsus and of Aretaeus of Cappadocia a few hundred years later.

In more recent years, injuries of this type have been on the increase, because of rapid industrial advancement, increased use of the automobile and aircraft, and many other technologic changes. It was to be expected that in the present conflict with its increased use of planes, tanks, bombing of civilians and heightened naval warfare, injuries of the vertebral column and spinal cord would become more frequent. Such is the case, as is evidenced by the early reports in the British and American literature.

Unfortunately in the past a broken back or neck was generally thought to signify a very serious accident resulting in sudden death or complete and permanent paralysis below the level of the lesion. In civilian practice this concept was shown to be untrue by many reports showing an average incidence of about twenty cases of uncomplicated vertebral fracture to every case of injury to the spinal cord. Watson-Jones[1] states that his experience with the British forces in the present war indicates that this latter proportion still holds true. There are various authors, however, who set the percentage of uncomplicated injuries of this type as low as from 65 to 90 per cent, and with adequate treatment most of the patients concerned may be expected to return to their former duties. For example, Hall and Morley reviewed all cases in which injury to the vertebrae had occurred in the Royal Air Force during the five years prior to 1940, and reported that of fifty-seven patients traced "the majority of the flying personnel affected returned to full flying duties."

I shall confine my remarks in this paper to injuries, particularly fractures, of the vertebral column.

Injuries to the vertebral column may be produced by a variety of mechanisms, among which are: Forced hyperflexion and extension, blasts and concussions, vertical compression and penetrating wounds. Watson-Jones mentioned some interesting accidents noted in his experience with the Royal Air Force and Navy:

A member of the Merchant Service fell from the crow's nest down the inside of the mast. The confined space kept him upright and the impact caused fractures of the os calces of both feet, and of one lumbar vertebra. When a torpedoed ship is heeling over and sinking, the sailor usually scrambles to the uppermost side of the deck before jumping. But if he is to clear the bilge keel which now appears above the sea level, the jump must be much wider than it would appear, and unless the man is experienced in the art of leaving sinking ships he may well land, not in the sea, but on the bilge keel or ship's side, and crush both his os calces and his spine. More frequently the sailor sustains this dual injury without ever leaving the deck. The fractures result from the explosion of a mine below the vessel. Instead of the victim crashing down from a height and striking the deck, the deck comes up and strikes the victim. A pilot bailing out from an aircraft at night may strike ground sooner than he expects, and fail to make allowance, by flexing his knees and hips, for the ten to fifteen foot drop to which a parachute landing corresponds. If his parachute has been damaged the violence of impact may be even greater.

INJURIES TO THE VERTEBRAL COLUMN

Injuries to the vertebral column consist of (1) fracture of transverse process, (2) fracture of spinous process, (3) fracture of vertebral body, (4) fracture-dislocation of vertebra, and (5) fracture of articular process.

Fracture of the Transverse Process.—Fracture of the transverse process is almost always confined to the lumbar region. A sudden unguarded contraction of the quadratus lumborum muscle may crack one or more processes. In many cases the evidence produced by the roentgenogram is misleading. The small detached fragments of bone may appear to be unimportant, so that only a short period of disability is anticipated. Actually, however, prolonged disability is the rule and should be anticipated because of the extensive injury to soft tissues. A hematoma often occurs and muscles, fasciae and aponeuroses are torn. Blood vessels are damaged and nerves are stretched or avulged, or later may be encroached upon by scar tissue.

A simple crack through one process or more, without separation of fragments, does not require immobilization in plaster. The lumbar region is firmly strapped with adhesive tape and is bandaged for three weeks. Activity is resumed cautiously in a few days and full activity is encouraged after four weeks.

If the avulsion of several processes indicates that more severe injury has occurred, a plaster jacket extending from the lower part of the pelvis to the nipple line is applied and maintained in place for from six to eight weeks. Within a few days the patient should be able to dress normally. Recumbency is unnecessary.

After from two to three weeks, with subsidence of pain, the patient should practice exercises designed

to benefit the spinal musculature. After eight weeks have passed the plaster jacket is discarded and mobilizing exercises are instituted and gradually increased. Radiant heat or short-wave diathermy and deep relaxing osteopathic manipulative treatment are indicated for relief of pain, stiffness, and muscular spasm. Unlimited activity should be possible within three to six months. The processes may unite by fibrous, rather than bony, union, but this is of no significance.

Fracture of the Spinous Process (Clay-Shovelers' Fracture).—In the flexed position of the trunk, the spinous processes are unprotected and exposed to injury by an external force. More frequently, the spinous processes are avulsed by muscular violence. (Usually, the process of the seventh cervical or the first thoracic vertebra is affected.) Debuch[2] reported on 187 patients who had the condition and were observed in one and a half years, and Matthes[3] treated 107 patients in two years. The condition as an injury of warfare has been relatively more common on the continent than elsewhere, probably because of the extensive building of fortifications there prior to the outbreak of hostilities.

During the act of driving in the shovel, or during the upward thrust with it, the worker experiences a sudden snapping sensation between the shoulder blades, followed by progressive pain which makes further activity impossible.

Immobilization is unnecessary, and operative excision of the detached fragments seems also to be unnecessary. After the lesion of the soft tissues has become static, heat and muscle relaxation are valuable in reducing pain and stiffness. Mobilizing exercises should be instituted cautiously and then gradually increased as tolerated. Despite only fibrous union, the patient usually returns to work, symptom-free, in about five weeks.

Fracture of the Vertebral Body (Flexion lesion).—Fracture of the vertebral body constitutes by far the most frequent injury sustained by the human vertebral column. Most fractures occur when the spinal column is in flexion. Three varieties of flexion fracture of the vertebra are seen: (1) simple wedge fracture, constituting approximately 60 per cent of flexion fractures of the vertebrae, (2) comminuted fracture, composing 10 to 15 per cent, and (3) fracture-dislocation, accounting for about 20 per cent.

Simple Wedge or Compression Fracture.—This is the commonest of spinal fracture and it includes 60 per cent of vertebral body injuries. The wedging is due to diffuse bending with vertical compression. As a rule more than one vertebra is involved. Two, three, four, or even five bodies may show reduction of the anterior vertical depth. In some cases the wedging appears to be confined to one vertebra, but actual measurement shows slight diminution of the anterior depth of the bodies above and below.

The patient may have fallen from scaffolding, from a crane, from a ship's deck, from a ladder or from a roof. The result is the same whether the victim strikes the ground in the sitting or in the standing position. The following examples are given: One blade of the propeller of an airplane broke off in the air, the plane settled to the ground like a leaf, with the pilot and his wife still sitting in the cockpit, and both victims sustained wedge fractures of the lumbar vertebrae. A workman fell 50 ft. and landed upright in soft soil. Although his back had not come into contact with any object, he had fractured his lumbar spine.

The association of wedge fracture of one or more vertebral bodies with crush fracture of the os calcis is not uncommon, and when either of these injuries is found, the patient must be specially examined for the other. In the wedge type of injury the elastic intervertebral discs escape damage. There is no fracture of the pedicles or laminae, and forward tilting of the body is possible only through movement of the interarticular facets. These joints are not actually dislocated but they are usually strained.

Comminuted Fracture.—Ten to 15 per cent of vertebral body injuries are comminuted fractures. The fracture is the result of a more localized angulation of the spine, such as occurs from the fall of a weight on the back of the shoulders. The injury occurs in coal mines from a fall of the roof. There is such sharp angulation that the anterior angle of one vertebral body is driven into the middle of the adjacent body.

It is important to recognize the comminuted type because union is much slower than in the simple wedging and compression type. Moreover, the intervertebral disc is often ruptured, and narrowing or disappearance of the disc space may cause slight kyphosis despite complete reduction of the bone. The injury is so localized that one pair of interarticular facets takes the whole strain, and slight aching pain, especially after exercise, often remains permanently. In many cases, however, the disc is so damaged that bony ankylosis occurs between the vertebral bodies, and pain is then relieved.

In very rare cases of comminuted fracture the adjacent vertebra not only displaces anterior marginal fragments forwards, but also displaces posterior marginal fragments backwards into the neural canal. There is then a considerable danger of spinal cord injury and special treatment is necessary.

Fracture-Dislocation. In about 20 per cent of thoracolumbar vertebral body fractures there is forward dislocation of the upper segment of the spine. The injury is primarily a dislocation of the intervertebral joint, and wedging or comminution of the vertebra below is incidental. The neural arch injury is a fracture of the pedicles or laminae, or a dislocation of the interarticular facets. The spinal cord and nerves may be damaged by contusion or compression, and the treatment may be dominated by the paraplegia. Nevertheless the bony displacement is comparable with simple compression and comminuted fractures, in that it is due to flexion force and is corrected by extension.

In some cases of fracture-dislocation with bilateral interarticular facet dislocation the upper segment of the spine is not only dislocated forwards but it is also displaced to one side in such a way that the articular processes are locked. These injuries are particularly dangerous and special treatment is necessary.

Extension Fracture. The anterior common ligament is of such strength that rupture or avulsion of the ligament from its bony insertion by hyperextension strain is almost impossible. Hyperextension frac-

ture is therefore extremely rare. It is this strength of the anterior common ligament and of the anterior attachments of the intervertebral disc which makes it possible to reduce flexion fracture of the spine by hyperextension. Whether the fracture is a simple wedge compression, a comminuted fracture or a fracture-dislocation, the tension of the anterior common ligament produced by hyperextension, corrects the displacement.

CLINICAL AND RADIOGRAPHIC DIAGNOSIS OF FRACTURE OF VERTEBRAL BODY

Clinical Signs.—The important clinical sign in fracture of the vertebral body is prominence of one spinous process. Even if this is not visible, the prominence can be felt when the examining finger is passed down the line of spinous processes. The patient usually but not always complains of pain; careful examination is necessary to determine whether or not pain is present.

Radiographic Diagnosis.—Radiographic examination is essential. The lateral view discloses the injury more clearly than the anteroposterior view. Even trivial wedging of a vertebral body, or slight buckling of the upper or lower margin, must be accepted as a complete fracture. The position shown in the radiograph does not represent the maximum deformity which is possible. Leverage of the spine above and below the injury is so powerful that any movement alters the deformity. In the extended position deformity is minimal, and yet as soon as flexion is permitted wedging appears. If the spine is not immobilized in full extension, the bone will absorb, the wedging will increase and severe deformity will develop.

If routine radiographs are inconclusive, further films may be taken with the spine in flexion. This often discloses the injury more clearly. If there is still doubt, the examination should be repeated ten to fourteen days later. The flexion movements permitted in the interval will bring to light any suspected fracture.

Kuemmell's Disease.—This condition was first described before lateral radiography of the spine was available. It was believed that a vertebra, though not actually fractured, could be injured and that delayed deformity supervened after many months. There is probably no such condition. Kuemmell's disease is simply an overlooked fracture of the spine in which failure to immobilize the injury has caused progressive wedging and absorption of bone.

DIFFERENTIAL DIAGNOSIS

Wedging of the lower thoracic vertebrae in Scheuermann's disease is often mistaken for a crush fracture, especially when the disease has developed so gradually that there have been no symptoms and the patient has accepted the slightly rigid round back as normal. The disease develops after puberty, involves the seventh to the tenth thoracic vertebrae and accounts for a rounded low thoracic kyphosis. All of the bodies are equally wedged and there is equal narrowing of all of the intervertebral discs. There may be herniation of the nucleus pulposus into the adjacent bone causing small depressions of the intervertebral surfaces. In later years there is lipping of the anterior margins of the vertebral bodies. These features, and the rarity of crush fracture in this particular region, serve as differential diagnostic points. Kyphosis due to congenital wedge vertebra and to the destructive changes of tuberculous disease and secondary neoplasms is easily diagnosed by radiographs.

INCIDENCE OF LOCATION OF SPINAL FRACTURES

In a series of 215 injuries of the vertebral column treated by Conwell[4] there were thirty-three cases of injury to the spinal cord. In the remaining cases there were 126 fractured vertebrae. Most of the fractures occurred at the thoracolumbar junction, at the junction of the relatively fixed thoracic and movable lumbar vertebrae.

In a review of the literature concerned with the localization of spinal fractures, Jefferson and others[5] analyzed 2006 cases of fracture and reported three peaks in the curve representing the frequency of occurrence. From above downward, the incidence of fracture in his series was: second cervical vertebra, 5 per cent, fifth and sixth cervical vertebrae, 25 per cent, and the first lumbar vertebra, 25 per cent.

TREATMENT

The principles of treatment are reduction of hyperextension and immobilization by plaster. In several varying technics these principles are utilized. Among these are the methods of Davis, Jones and Ryerson. In some of these methods the unsupported trunk finds its own limit of hyperextension; in others the surgeon determines the degree of extension. The two-table method as employed by Watson-Jones[1] requires about fifteen minutes. Many prefer to use the method of gradual reduction in which frames of one kind or another are employed (such as the Rogers, the Herzmark or the Bradford frames).

Regardless of what method is used, certain principles must be kept in mind. For treatment to be effective, the maximum of extension must be obtained. The plaster jacket must be applied smoothly and with proper padding over bony prominences, and should extend from the symphysis and groin to the clavicles and, posteriorly, from the gluteal cleft to the scapulae. Immobilization must be continued until union is firm; as a rule for four to six months, depending on the nature and severity of the injury and its reparative progress.

After-Treatment.—Exercises should be taken throughout the period of immobilization. In uncomplicated cases, exercises for the spinal and abdominal muscles are practiced regularly. While lying on the face with the arms by the side, the head and shoulders are slowly raised from the bed and lowered again. Each hip is slowly hyperextended with the knee straight, and as the patient becomes more expert both hips are simultaneously hyperextended. These exercises are far more effective in maintaining the tone of spinal muscles than any direct faradic stimulation and massage, even if such treatment were possible. Moreover, functional activity prevents stiffening of the immobilized joints of the spine. Within a few days walking is resumed. The patient should dress normally, go into the streets, into the parks, and pursue normal activities. The sooner a man is dispossessed of the idea that "his back is broken" and that "he will never walk again," the more certainly will functional disturbances be avoided.

Check X-Ray and New Plaster—After four weeks, a further radiographic examination is made. If the films show that there is a tendency to re-

compression of the vertebral body, or if the jacket is obviously becoming loose, a new plaster must be applied in maximum hypertension.

Duration of Immobilization.—In many cases of fracture of the spine, the plaster jacket is removed too soon. Crush fractures are slow in consolidating, and flexion movement must not be allowed earlier than four months after injury. Severely comminuted fractures unite even more slowly, and in these cases the jacket should be retained for six months.

Convalescent Brace.—It is inadvisable to use a posterior spinal support at any stage of treatment. In the early months it gives the surgeon a false sense of security. However skilfully made and however heroically worn, there is no type of posterior support which will prevent collapse of an unsoundly consolidated vertebra. In later months it gives the patient a false sense of security. Months or even years may elapse before he can be persuaded to discard a splint which has done nothing except to prevent the stretching of adhesions. Either the fracture is not firmly consolidated and a posterior splint is inadequate, or the fracture is consolidated and a splint is unnecessary. It is actually understating the case to say that a posterior spinal support is unreliable in the early stages and unnecessary in the late stages. The fitting of a steel and leather splint suggests to the patient that the surgeon is not confident of the result and that he is still afraid. The fear which is in the patient's mind is magnified. He is more than ever convinced of the dangerous nature of his injury. The splint constantly reminds him of his back, and the psychological disturbances very often increase. It is very much better to continue the immobilization in plaster until the surgeon is entirely satisfied, so that he can assure the patient that his back is perfectly safe, that pain and discomfort is due only to adhesion formation, and that it will disappear if exercises are continued.

Mobilization Exercises.—As soon as radiographs show firm union and the plaster is discarded, the patient is taught flexion exercises. If regular functional activity has already been pursued, there is no difficulty in regaining full movements of the spine within a few months. It is quite untrue that immobilization in the position of extreme hyperextension causes permanent stiffness. Manipulation for adhesions is seldom required.

Treatment of Thoracic Fractures.—The treatment of fractures of the upper thoracic vertebrae is difficult. Reduction of vertebral fractures by hyperextension depends on the tremendous leverage power of the segments of the spine above and below the fracture. But this movement is centered on the upper lumbar spine. A fractured thoracic vertebra lies in the middle of one of the arms of leverage and not at the junction of the two. Most of the energy of hyperextension movement is concentrated in the lumbar region and very little is transmitted to the thoracic portion of the spine. Therefore the two-table postural technic and the foot suspension technic cannot completely correct the crushing of a high thoracic vertebral body. In these cases it is better to apply direct pressure under the kyphosis. The patient lies face upwards on an operating table with the injured region lying on a kidney bridge which is gradually pumped up to its highest level. The patient's body weight is thus suspended across the bridge with considerable pressure under the vertebrae at the level of injury. A plaster jacket is applied from the pelvis over the chest and neck to the chin so that the upper thoracic and cervical portions of the spine are held in full extension.

Even with this technic, imperfect reduction of the crushing upper thoracic vertebrae must sometimes be accepted. Fortunately it is of little significance and seldom accounts for appreciable pain, because flexion, extension and rotation movements in this region of the spine are normally limited.

Treatment of Old Compression Fractures.—The ideal time for reduction is the day of injury. Perfect reduction is still possible by the simple postural technic during the first ten days after injury. Older injuries are reduced only with difficulty. If the fracture is from two to ten weeks old when it is first seen, manipulative reduction should be attempted under anesthesia. If general anesthesia is employed, the Davis technic[6] is the most convenient, and gentle pressure should be applied over the kyphosis. It may be advisable to maintain the hyperextended position for ten or fifteen minutes before applying plaster. Even if the compression has been imperfectly corrected, the jacket should be retained until four months from the date of accident in order to prevent further wedging of bone, to enable the ligaments to tighten, and to encourage redevelopment of the extensor muscles of the spine. If the injury is more than ten weeks old it is unlikely that manipulation even under anesthesia will improve the position of the bone. Nevertheless a plaster jacket should be applied in the position of greatest possible extension and hyperextension exercises should be taught.

If the fracture is many months old, pain may be relieved by local fusion of the laminae and spinous processes of the involved vertebrae by the Hibbs or Albee operation. In many cases, however, persistent pain, continued weakness, obvious deformity and the lack of encouraging treatment, has already made such a deep psychological impression that patients never return to heavy work.

Results of Treatment of Fracture without Paraplegia.—It has been said that the victims of vertebral crush fractures never return to heavy work. If the statement was ever true it is certainly not true today. It has been suggested that perfect reduction is not possible, that if it is possible it cannot be sustained, and that if it can be sustained the result is no better than if it had never been achieved. What are the facts?

Anatomical Results: It is nearly always possible to correct wedging and compression in recent lumbar fractures. It is easy to secure a reduction so accurate that the level of injury cannot be determined even with the aid of radiographs. With careful after-treatment the reduction can be maintained. In no more than a small percentage of cases is there measureable compression of the bone in the final radiograph; still less is there a kyphotic deformity which is evident clinically.

Functional Results: Even though the spine has been immobilized for many months, permanent stiffness is exceptional. There is no difficulty in regaining

a perfectly normal range of movement. In two-thirds of the cases there is complete freedom from pain, and patients report that their backs are as good as before the accident. One-third of the patients complain of occasional discomfort or pain. Is this relative freedom from disability also to be observed after imperfect reduction?

Uncorrected Wedging: It is exceptional for the patient with traumatic wedging of the vertebral bodies to be free from pain. The complaint is monotonous in its regularity. Many patients, years after injury, long after the conclusion of all medicolegal dipute, still complain of serious pain. It is the malalignment of interarticular facets which is responsible for joint strain and persistent aching. On the other hand, if the fracture was comminuted and the intervertebral disc so damaged that bony ankylosis has supervened, even considerable local deformity may be unassociated with pain. Pain due to imperfect reduction is therefore more common in the simple wedge and compression fractures which show no tendency to ankylosis than in the comminuted fractures.

Narrowing of Intervertebral Disc: Narrowing of the disc is rare after simple compression fractures, but it is more frequent in comminuted fractures where the disc is often ruptured. Slight narrowing of the disc space is unimportant, but it may account for a trace of kyphosis even when there is negligible deformity of the bone.

Spur Formation: The formation of bony spurs at the anterior margins of vertebral bodies is well marked only in unreduced fractures. Large spurs represent unreduced fragments of the crushed vertebra. They are commonly present in imperfectly treated cases but seldom in accurately reduced fractures. Slight spur formation may follow the best treatment. It is due to subperiosteal ossification at the attachment of the anterior common ligament. It does not indicate arthritic change, and it is not responsible for symptoms.

Capacity for Work: In a consecutive series of sixty-seven compression and comminuted fractures reported by Watson-Jones in a paper, "Postural Reduction of Fractures of the Spine,"[7] 80 per cent of the patients resumed their pre-accident employment and one-half of these were men engaged in heavy manual labor. The average incapacity period in heavy workers was ten months, and in patients engaged in lighter employment seven months.

VERTEBRAL FRACTURES WHICH MUST NOT BE HYPEREXTENDED

A group of injuries which comprise about 10 per cent of all fractures of the thoracolumbar vertebrae are dangerous. It is important to recognize them because when they are present hyperextension will aggravate the injury and may even produce compression of the spinal cord and paraplegia. This group includes: (1) fracture-dislocation, with locking of the articular processes; (2) comminuted fracture, with involvement of the neural canal; (3) hyperextension fracture of the body and neural arch, and (4) traumatic spondylolisthesis.

In the cervical region the following types of fracture may be noted: (1) crush fractures of the bodies; (2) sprains and subluxations of the interarticular facets (3) dislocations of the interarticular facets and intervertebral bodies, and (4) fractures and dislocations of the atlas.

Crush fractures of the cervical vertebrae are less common than dislocations and fracture-dislocations. If uncomplicated by interarticular facet displacement, they are treated the same as crush fractures of the lumbar vertebrae—by hyperextension of the neck and immobilization in plaster.

Subluxation* of the cervical interarticular facets is a serious injury, more so than is generally considered. It may be caused by a simple involuntary forced jerk of the head, such as in the sudden stopping of a vehicle or airplane. There may be hemorrhage around the cord, paraplegia and death, with no apparent bony injury. Even if there is no danger of injury to the spinal cord, failure to immobilize the joints for an adequate period may cause recurrent subluxation. Compression of nerve roots and irritation of them lead to permanent and disabling neuritis in one or both upper limbs.

In the treatment, the patient's neck is fully extended and complete immobilization with plaster must be obtained and maintained for not less than two months. Afterward, if pain persists and recurrent subluxation is ruled out, heat, traction with manipulation and active assistive exercise to normal range are invaluable in overcoming the effects of adhesions.

In dislocations of the cervical interarticular facets and vertebral bodies the ordinary methods of reduction are worthless. Strong and carefully controlled traction with skull calipers is necessary for three to four weeks after the deformity has been overcome. Then immobilization is obtained.

In the after-treatment of all these vertebral lesions, the tendency toward early removal of all forms of supports and braces is gaining. As Watson-Jones[1] stated, "Either the fracture is not consolidated and a brace is worthless or it is consolidated and a brace is unnecessary." Some orthopedists prefer to use a bivalved or buckled cast during the ambulatory period to facilitate inspection, the making of roentgenograms and application of physical therapy. Exercises for the spinal muscles are employed throughout the treatment. Functional activity, in addition to maintaining muscular tone prevents stiffening of the immobilized joints. When the plaster is discarded, the patient is taught flexion exercises. Radiant heat, osteopathic manipulative treatment and warm baths will aid in restoration of normal function. It is rare to see any marked degree of permanent stiffness result from immobilization. Watson-Jones[1] states that "A man who fractures his spine should come out of plaster after four months, with better muscles and a better poise than he had the day of injury."

Unfortunately, fractures of the vertebrae frequently are overlooked, and hence are untreated for long periods. When this occurs, these lesions rank among the most disabling ones, and are serious handicaps to future hard labor. Osgood[8] wrote that the basic difficulty in these cases is faulty body mechanics induced by kyphosis and angulation at the site of the fracture. Proof of this is found in the observation of old lesions, roentgenograms of which disclose a firm bony bridge with complete ankylosis, in spite of which

*Subluxation: The term is not used in the sense in which it is frequently employed to designate an osteopathic joint lesion.

the patient has persistent pain and disability. Osgood decried the use of bone grafts and fusions in these cases, and said that with the use of heat, massage, rest and recumbency, corrective exercises and bracing the disability can be eliminated.

1375 Penobscot Bldg.

REFERENCES

1. Watson-Jones, R.: Discussion. Proc. Roy. Soc. Med., 1941 (May) 34:454-456.

2. Debuch, L.: Die Schipperkrankheit und ihre Behandlung. Arch. f. Orthop. u. Unfall-Chir., 1936, 37:223-231.

3. Matthes, H. G.: Unsere Erfahrungen bei der Schipperkrankheit. Arch. f. Orthop. u. Unfall-Chir., 1936, 37:232-245.

4. Conwell, H. E.: The Management of Recent Compressed Fractures of the Vertebral Bodies without Cord Injury. Referred to by Ellis, J. D.: The Injured Back and its Treatment. Charles C. Thomas, Springfield, Ill., 1940, pp. 108-156.

5. Jefferson, G., *et al.*: Referred to by Moritz, A. R.: The Pathology of Trauma. Lea & Febiger, Philadelphia, 1942, p. 386.

6. Davis, Loyal; Jones, Robert, and Ryerson, E. W.: Referred to by Dinken, Harold: War Injuries of the Vertebral Column and Spinal Cord, with Special Reference to Physical Treatment. Med. Clin. N. America. Mayo Clinic Number. W. B. Saunders Co., Philadelphia, 1943.

7. Watson-Jones, R.: Postural Reduction of Fractures of the Spine. Jour. Bone & Joint Surg., 1938, 20:567.

8. Osgood, R. B.: Faulty Body Mechanics and Back Injuries; Etiologic and Prognostic Significance. Referred to by Ellis, J. D.: The Injured Back and Its Treatment. Charles C. Thomas, Springfield, Ill., 1940, pp. 214-232.

EVALUATION OF HIP FRACTURES

J. Paul Leonard, D.O.

(Continued from page 516)

REFERENCES

1. Leydig, S. M.: Trochanteric Fractures of Femur: New Type Ambulatory Cast for Treatment. Jour. Missouri State Med. Assn., 1939 (Oct.) 36:413-415.

2. Hart, Vernon L.: Fractures of Neck of Femur. Surg. Jour., 1942 (Nov.) 12:763-767.

3. Albee, Fred H.: Biophysiological Consideration in Treatment of Subcapital Fractures of Hip. Jour. Internatl. Coll. Surg., 1943 (May-June) 6:173-178.

4. Davis, A. G.: Pin Distraction as Cause of Nonunion. Jour. Bone and Joint Surg., 1943 (July) 25:631-643.

5. Moore, A. T.: Fractures of Neck of Femur; Treatment of Internal Fixation with Adjustable Nails. Surg. Gynec. and Obstet., 1937 (Feb.) 64:420-436.

6. Morrison, G. M.: Hip Nailing. Jour. Maine Med. Assn., 1939 (Sept.) 30:213-215.

7. Gibson, L. V., and Arnold, C. H.: Modification of Smith-Petersen Pin. Jour. Internat. Coll. Surg., 1942 (March-April) 5:180.

8. Crecca, W. D., and Cetrulo, G. I.: Improved Technic for Blind Nailing of Neck of Femur. Am. Jour. Surg., 1943 (July) 61:93-98.

9. Johnston, H. A.: Combination of Nail and Screw for the Fixation of Fractures of the Neck of the Femur. Am. Jour. Surg., 1944 (Mar.) 63:329-336.

10. Carothers, R. G., and Giannestras, N. J.: Intracapsular Fracture of Neck of Femur Treated by Internal Fixation. Am. Jour. Surg., 1943 (Feb.) 59:392-403.

11. Lucas, Donald B., and Varney, J. H.: Fractures of the Hip. West. Jour. Surg., 1943 (July) 51:283-285.

12. Compere, E. L., and Wallace, G.: Etiology of Aseptic Necrosis of Head of Femur after Transcervical Fracture. Jour. Bone and Joint Surg., 1942 (Oct.) 24:831-841.

13. Santos, J. V.: Changes in the Head of the Femur after Complete Intracapsular Fracture of the Neck. Their Bearing on Nonunion and Treatment. Arch. Surg., 1930, 21:470.

14. Phemister, D. B.: Fractures of Neck of Femur, Dislocations of Hip, and Obscure Vascular Disturbance Producing Aseptic Necrosis of Head of Femur. Surg. Gynec., & Obstet., 1934, 59:415.

15. Cleveland, Mather, and Bosworth, D. M.: Fractures of the Neck of the Femur. A Critical Analysis of Fifty Consecutive Cases. Surg., Gynec., & Obstet., 1938, 66:646.

16. Pauwels, Friedrich: Der Schenkelhalsbruch: ein mechanisches Problem. Grndlagen des Heilungsvorganges Prognose und kausale Therapie. S. 6. (beilageheft z. Ztschr. f. Orthop. Chir., LXIII.) Stuttgart, Ferdinand Enke, 1935.

17. Freund, Ernst: Osteochondritis Dissecans of the Head of the Femur. Partial Idiopathic Aseptic Necrosis of the Femoral Head. Arch. Surg., 1939, 39:323.

18. Albee, Fred H.: Bone Graft Surgery, D. Appleton-Century Co., Inc., New York, 1940.

19. Neufeld, Alonzo: Referred to by Blount, W. P.: Blade-Plate Internal Fixation for High Femoral Osteotomies. Jour. Bone & Joint Surg., 1943 (Apr.) 25:319-339.

ADDITIONAL REFERENCES

Becton, Joseph D.: Fractures of Femoral Neck. Texas State Jour. Med., 1943 (Mar.) 38:649-652.

Bickel, W. H., and Ghormley, R. K.: Bracket Operations for Ununited Fractures of Neck of Femur. Proc. Staff Meet. Mayo Clin., 1941 (May 28) 16:345-348.

Evans, E. Mervyn: Well-leg Traction Apparatus for Reducing Fractured Femoral Neck. Lancet, 1941, 1941 (Oct. 25) 2:483.

Henderson, Melvsin S.: Extra-Articular Osteosynthesis for Nonunion of Fracture of Neck of Femur. Arch. Surg., 1941 (Mar.) 42:557-565.

Lewis, Kenneth M.: Use of Smith-Petersen Nail In Treating Fractures of the Neck of Femur. Surg. Clin. N. Amer., 1943 (Apr.) 23:520-533.

Speed, J. S., and Smith, H.: Trochanteric Osteotomy for Ununited Fractures of Neck of Femur. South. Med. Jour., 1941 (Aug.) 34:798-806.

Steindler, Arthur: Orthopedic Operations, Charles C. Thomas, Springfield, Ill., Baltimore, Md., 1940.

Thomas, T. T.: End Results of Screw Fixation in Intracapsular Fractures of Neck of Femur. Am. Jour. Surg., 1932 (July) 57:65-75.

PERIPHERAL NERVE CHANGES AND ANOMALIES

Beveridge H. Moore, M.D., Chicago, presents a study of peripheral nerve changes associated with congenital deformities in *The Journal of Bone and Joint Surgery*, April 1944. This paper is part of a study which began with the discovery of an obvious neurofibroma in a case with congenital localized hypertrophy of two fingers. The cases upon which this study is based include twenty cases of spastic paralysis, eleven of club-foot, seven of pseudo-arthrosis, six of absence of bones, five of macrodactyly, three of absence of limbs, five of arthrogryposis, three of achondroplasia, two of supernumerary digits, and others making a total of seventy-eight. The association of the characteristic *cafe au lait* pigmentation of neurofibromatosis with congenital deformity was noted in an early case and was looked for carefully in later cases. It was noted in twenty-eight of the patients in this series and pathologic changes of the nerves were found in seventy of them.

In microscopic study of the nerves, the writer discovered and stressed secondary pathologic changes, which he called fibrotic degeneration, widely distributed in anodular sections of nerve trunks. This pathologic condition was found in a high proportion of peripheral nerves from cases of spastic paralysis. This, the writer, thinks is highly interesting in view of the fact that while standard textbook teaching is that spastic paralysis is due to brain injury during delivery, neurologists tend to consider that many cases are due to agenesis or imperfect development of certain brain areas. This theory, of course, would place the condition in the class of a congenital deformity rather than a trauma. Possibly the fibrosis found in the peripheral nerves may be an indication of congenital deformity. It is equally possible that the defect or injury in the cerebrum may cause the changes in the peripheral nerves.

Even though the findings presented seem to show a rather definite association of abnormal peripheral nerve tissue with congenital deformity, the writer does not consider it proved that the nerve defect is the cause of the malformation. Even if the nerve defect were considerd as the cause, the question would immediately arise as to the cause of the nerve defect. The practical value of the study, the writer believes, is that it points out that too little attention has been given to the study of peripheral nerve structure by the average surgeon and that further study may yield interesting findings. It is also felt that the nervous system may have an unrecognized function in coordinating and guiding the growth processes so that a normal growth pattern is obtained.

KATHERINE BECKER

THE JOURNAL OF THE
AMERICAN OSTEOPATHIC ASSOCIATION
Published monthly by the American Osteopathic Association

Publication Office, 100 S. Kenilworth Ave., Oak Park, Ill.
Editorial Office, 540 N. Michigan Ave., Chicago 11, Ill.
Address all communications to the Chicago Office

RAY G. HULBURT, D.O.....Editor
R. E. DUFFELL, D.O.....Assistant Editor
CLAYTON N. CLARK, D.O.....Business Manager

EXECUTIVE COMMITTEE

PRESIDENT.....WALTER E. BAILEY, D.O., St. Louis
PRESIDENT-ELECT.....C. ROBERT STARKS, D.O., Denver
PAST PRESIDENT.....R. McFARLANE TILLEY, D.O., Brooklyn, N. Y.
FIRST VICE PRESIDENT.....WAYNE DOOLEY, D.O., Los Angeles
CHAIRMAN PROFESSIONAL AFFAIRS.....S. V. ROBUCK, D.O., Chicago
CHAIRMAN PUBLIC AFFAIRS....JAMES O. WATSON, D.O., Columbus, O.
EXECUTIVE SECRETARY.....R. C. McCAUGHAN, D.O., Chicago

Subscription - - - - - - - - - - Ten dollars a year in advance

Vol. 43 July, 1944 No. 11

THE TIME HAS COME

"Is osteopathy going forward, or is it headed for oblivion? The answer depends in part on other questions: What is to be our attitude toward medicine in general and toward our own problems of public and professional education and legislation?"

These were the introductory sentences in an article which appeared in this JOURNAL nearly fifteen years ago.[1] They are called to mind by the titles of four out of the seven original articles in *The Journal of the American Medical Association* for June 10, 1944: "Structure and Development of the Spine," "Backache: Examination and Differential Diagnosis," "The Neurologic Aspects of Low-Back Pain and Sciatica," "Back Pain in Disease of the Gastrointestinal and the Accessory Gastrointestinal Tract." Observing these one thinks of the article, "Mechanics in Relation to Derangement of the Facet Joints of the Spine," in *Archives of Physical Therapy* for April, 1944, commented on in these columns last month by Dr. R. E. Duffell.[2]

Shall these things lead us back to quote further from that article of 1929:

"A newly found fact may take its place at once in the great structure of science or, because no place is yet ready for it, it may be forgotten. If forgotten, it must be found again, because the time will come when its place in the edifice is ready, and demands its presence. If a fact be found and developed, and those who have it attempt to keep it for themselves, then as the various other groups carry on, they will find and appropriate this fact, because the building cannot go on without it.

"The time has come. The world is ready. If we ourselves can envision osteopathy as it is, we will rouse ourselves and quickly and unmistakably put it in its place in science even as we have already established it as a practical therapy. If we do not place osteopathy in the scientific structure and correlate it with other known facts, then others will find it, will place it, and will take the credit—even as they are in the process of doing today . . .

"We must now ask ourselves whether the science of osteopathy is as good as it can be and should be at this stage of the world's history. If we do not make and keep osteopathy at the highest possible standard, then we are untrue to the Old Doctor's memory and false to our obligations to humanity. Moreover, only as we keep osteopathy the best that it can be, only as we maintain it as the most efficient and complete system of health and healing that it is possible to make it, do we have any excuse for being, or any hope for survival . . .

"If somebody else found certain of the facts of osteopathy first, that should not prejudice us against accepting them. If someone finds them after we did, we should be gratified rather than resentful. If another steals the credit, then we are at fault for not having established priority. Thus we are reminded again that if we can envision osteopathy as it is, we will take steps to place it quickly and unmistakably on the scientific map. How can we put it there? By being thoroughly scientific in our foundations, our thinking, our contacts, and our application of osteopathy in practice. These considerations enter into our activities in regard to professional education, public education and legislation . . .

"We must recognize, and educate the world to recognize, what osteopathy is. We must know, and make others know, that the practical application of the art of osteopathy is even more trustworthy and more efficacious than the application of the art of [allopathic] medicine. Then we can stand before legislators and look them in the eyes, and have a chance of convincing them that we are entitled to full and adequate legislative recognition.

"The great question need not be whether we have aped any other school, but rather whether we have solved the problems of scientific medicine from our own standpoint, in keeping with the principles of natural immunity and structural integrity, and to the best interests of the people for whose sake the science of medicine exists."

In connection with these words from 1929 perhaps we should consider again what the same writer said at a still earlier date: "If osteopathy is worthy of investigation, now is the time for us individually and as a profession to cooperate in every possible way with such institutions as we have which are doing constructive research work. Likewise, if we have any suggestions to make for the expenditure of some of the wealth held in trust by the great foundations, the time to suggest is now."[3]

In that same article in 1927 other sentiments were expressed which were paraphrased in an editorial in these pages in June, 1929:

"The effects of investigation by old school doctors into manipulative methods may well be bad for those

1. Hulburt, Ray G.: Osteopathy—The Science of Medicine. Jour. Am. Osteop. Assn., 1929 (Sept.) 29:6-10.
2. Through a typographical error Dr. Duffell's signature was omitted from that editorial.
3. Hulburt, Ray G.: Trend Toward Osteopathy. Jour. Am. Osteop. Assn., 1927 (July) 26:893-898.

doctors, for the osteopathic profession and for the public, [since] the osteopathic concept is diametrically opposed to much that [those] doctors have been taught. They are liable to recognize only parts of the principle, accept them under protest and misinterpret and misapply them. They will continue to discredit the name of osteopathy, its practitioners and its institutions in every possible way.

"They will claim that such manipulative methods as they use either constitute all that is of value in osteopathy or are far superior to osteopathy. They will assume and teach that they are in every way better equipped and prepared to use these methods, than are osteopathic physicians with their scientific training in the use of osteopathic methods based on a sympathetic and whole-hearted belief in its principles. The public will provide the victims for those [allopathic] doctors who are forced to take up manipulative methods against their own judgment by the popular demand which the medical publicity machine will undertake to make. It will provide victims for those who take up such methods because 'they may work,' but who are not very enthusiastic about them. It will provide victims likewise for those who adopt such methods and push them to the limit, just as they do any new thing."

It is a long time since those words were written: "The time has come. The world is ready." As someone has said, it is not now a question of catching the boat easily—of jumping to it just as it pulls from the dock. The boat has gone. It is a question of taking a row boat and pulling to catch up. It is the kind of thing that many Americans in their happy-go-lucky way have been doing for more than 300 years. It yet can be done. It is what Dr. Andrew Taylor Still would have advocated, would have undertaken, and would have accomplished.

"The time has come. The world is ready."

THE A.M.A. VERSUS SISTER KENNY

The A. M. A. Committee for Investigation of the Kenny Treatment of Poliomyelitis has spoken. The experts in orthopedic surgery who composed the committee filed a report before the recent A.M.A. convention and it has been published in the official journal.[1]

The committee claims to have visited a total of six cities and sixteen clinics and to have examined approximately 740 poliomyelitis victims, approximately 650 of whom had been treated by the method advocated by Sister Elizabeth Kenny. In addition the committee sent out questionnaires to over 900 orthopedic surgeons. How many replied, it is not stated, but from the answers that did come in "no definite conclusions could be drawn . . ."

The committee's report carries no statistical information. It is indefinite in many respects. Its purpose, obviously, is to belittle the Kenny method by showing that it is not new, that Lovett,[2] for instance, as far back as 1917 advocated a treatment which included the use of hot wet packs. Such treatment, the committee says, has been followed successfully for many years by M.D.'s in this country and "is still the basis of most of our modern therapy for poliomyelitis." THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION commented editorially[3] along similar lines in January, 1942, pointing out that an osteopathic physician, writing in THE JOURNAL[4] (November, 1916—a year earlier than the Lovett reference) urged the use of hot wet packs. In a discussion of "Osteopathy and the Kenny Treatment of Infantile Paralysis," in the July, 1943, JOURNAL[5] the writer stated that "whatever advantage the Kenny regimen has to offer is confined to the early treatment of the acute phase of the [disease.] In other words, the concentrated use of hot packs in the manner described by Kenny . . ."

The A.M.A. committee report attacks the four major points in the Kenny concept and attempts to show:

First, That while muscle "spasm" does exist in the early phases of the disease, it usually disappears spontaneously. "There may be residual 'spasm' which can lead to deformity, but it is by no means the cause of the residual paralysis."

Second, That the flaccid muscles which Pohl and Kenny[6] have said are normal but lose their ability to contract because of functional dissociation (alienation) from the nervous system, *are not normal.* Also that the term "mental alienation" does not describe a new discovery, the condition having been known in the past by the terms, "temporary paralysis, stretch paralysis and physiologic dissociation" and having been well described as long ago as 1911 by Robert Jones.[7]

Third, That the term "incoordination" used by Pohl and Kenny[6] is "merely another term for the condition of muscle substitution or mass muscle action of an extremity, long recognized by orthopedic surgeons."

Fourth, That "if deformities are prevented the flaccid paralysis caused by destruction of nerve cells is the most important cause of crippling," while Pohl and Kenny[6] state that "most supposed weakness is due to untreated spasm and to disuse in the dissociated muscles," and that "paralysis due to nerve cell death occurs, but is not a common condition."

The committee in its report analyzed ten steps in the Kenny method, briefly as follows:

1. In commenting on the Kenny directive that active treatment including muscle reeducation should be

1. Ghormley, Ralph K. *et al.*: Evaluation of the Kenny Treatment of Infantile Paralysis. Jour. Am. Med. Assn., 1944 (June 17) 125. 466-469.

2. Lovett, R. W.: The Treatment of Infantile Paralysis. Blakiston Son & Co., Philadelphia, 1917.

3. Duffell, R. E.: A Step Forward in Poliomyelitis Care. Jour. Am. Osteop. Assn., 1942 (Jan.) 41:234-237.

4. Forbes, H. W.: Treatment of Acute Poliomyelitis. Jour. Am. Osteop. Assn., 1916 (Nov.) 16:779-783.

5. Duffell, R. E.: Osteopathy and the Kenny Treatment of Infantile Paralysis. Jour. Am. Osteop. Assn., 1943 (July) 42:505-511.

6. Pohl, John F., and Kenny, Elizabeth: The Kenny Concept of Infantile Paralysis and Its Treatment. Bruce Publishing Co., Minneapolis, 1943.

7. Jones, Robert: Certain Operative Procedures in the Paralysis of Children. Brit. Med. Jour., 1911 (Dec. 9).

begun as early as possible, the committee said: "The general condition of the patient during the acute febrile stage may be such that the handling necessitated by the Kenny treatment can be detrimental. In other words, therapy during the acute febrile stage is primarily a medical problem." [Whatever that means] Later the committee does not seem to be too much concerned about the handling of poliomyelitis victims in the acute stage when it says, "We do not feel that muscle examinations, if carefully and judiciously conducted, are of harm to the patient."

2. The committee agrees with Sister Kenny that proper positioning in bed is essential, but comments that this has been a standard practice among physicians for over thirty years.

3. In regard to the relief of "spasm" and pain by the use of hot foments, the committee again says that heat in some form has been used by physicians for many years. It comments further, however, and says that "pain is not an important feature of the disease in most instances . . ." but admits that pain can cause "functional loss of use" of muscles. When pain is present, the committee says, it can be relieved by other measures, but fails to mention what those measures are. The committee also states that "recovery from 'spasm' in most instances takes place spontaneously," and that "hot packs may relieve this 'spasm,' but so will adequate rest." Again it does not indicate the time element required in the rest regime as compared with that when hot packs are used. It reports that "in some instances hot packs seemed to increase and prolong the 'spasm' and that the 'spasm' was relieved after the packs were discontinued . . ." It concludes that "The use of hot foments therefore cannot be considered as a panacea in this disease and their use must be guided by good medical judgment." [Whatever that is.]

4. The committee apparently accepts the directive that active and passive movement of the extremities be carried out within the range of comfort, but points out again that this procedure has been recommended by many physicians in the past.

5. The committee agrees with Sister Kenny that muscle reeducation should be begun as early as possible, but says that "Jones and Lovett[8] described and used a method of muscle reeducation which in principle is similar to the method taught by Miss Kenny."

6. In regard to the use of splints and braces, the committee reports that "cases have been seen under Kenny treatment in which early contractures were developing, and by application of plaster splints these contractures were controlled after their correction." The committee "believes that splints are beneficial for some patients." The lack of discussion as to whether or not splints should be used in the early stages of poliomyelitis would seem to indicate that the committee is hedging. It does not want to admit that splints are harmful, while Dr. J. Albert Key,[9] a prominent member of the committee, in as recent an article as that appearing in *Surgery, Gynecology and Obstetrics* for October, 1943, still maintains that "immobilization of a limb which is tender and painful in a well-fitting splint or cast relieves the pain, relieves the tendency to muscle contracture, and prevents deformities much quicker and more easily than can be accomplished by the constant attention of a skilled therapist with the continuous application of hot packs for 12 hours a day."

7. Sister Kenny does not believe that the respirator is necessary, while the committee is of the opinion that "respirators have saved many lives and should be used for patients with sufficient paralysis to embarrass respirations."

8. The committee says "There is no evidence that the Kenny treatment prevents or decreases the amount of paralysis," and "criticizes severely the [alleged] statement of Miss Kenny to patients who have come to her after treatment elsewhere that had this case come to her early the disability would have been prevented. Such statements are not founded on facts."

9. It is alleged by the committee that Sister Kenny gives credit to her treatment for all recovery or improvement from poliomyelitis and "does not take into account the factor of spontaneous recovery."

10. The committee says that the therapeutic application of baths, which Sister Kenny contends is an important part of her treatment, has long been used by M.D.'s in the treatment of poliomyelitis.

Further comments by the committee are quoted as follows:

"Miss Kenny has repeatedly stated that under 'orthodox' treatment only 13 per cent of the patients recovered without paralysis, while under her treatment over 80 per cent recover. We believe that this is a deliberate misrepresentation of the facts of treatment by other methods . . . Miss Kenny has been told repeatedly that this is not a fair comparison to make and that, if every case in an epidemic is included in the statistics, recovery of from 70 to 90 per cent can be expected from 'orthodox' treatment."

"The continuous hot packs for all patients with minimal evidence of 'spasm' is of questionable value and an unnecessary waste of manpower and hospital beds."

"While the committee disapproves of and condemns the wide publicity which has misled the public and many members of the medical profession, it acknowledges that this has stimulated the medical profession to reevaluate known methods of treatment of this disease and to treat it more effectively."

In reading over this report, one is struck by the similarity between it and the article by Dr. Key[9] referred to previously, in which this noted orthopedic surgeon gives his reasons why the orthodox is better than the Kenny treatment of poliomyelitis. In fact, the wording in certain portions of the report is almost exactly the same. For instance, the statement: "There is no evidence that the Kenny treatment either prevents

8. Jones, Robert, and Lovett, R. W.: Orthopedic Surgery. Ed. 2. William Wood & Co., New York, 1929.
9. Key, J. Albert: Reasons Why the Orthodox Is Better Than the Kenny Treatment of Poliomyelitis. Surg., Gynec. & Obstet., 1943 (Oct.) 77:389-396.

or decreases the extent of the paralysis," which appears in Key's article, is changed in the report to read: "There is no evidence that the Kenny treatment prevents or decreases the amount of paralysis." Key says, "The advocates of the Kenny method do not recognize spontaneous recovery, but give credit to the method for all improvement which may occur in patients while under treatment and make extravagant claims of cures." Item eight in the report is similar. And again Key says, "The advocates of the orthodox method know that flaccid paralysis is the cause of crippling if deformity can be prevented. Consequently the treatment of the paralyzed muscles is of first importance in the orthodox treatment while it plays a minor role in the Kenny method." One would be led to believe from these thoughts so similarly expressed in the Key article and in the report that the contents of the latter were dominated and dictated by Dr. Key.

The writer of this editorial is of the opinion that the controversy between the A.M.A. and Sister Kenny concerns not so much the method of her treatment, which definitely has been beneficial in many cases, as with the Kenny explanations of the phenomena observed in poliomyelitis and the reasons she gives for the avoidance of splinting and the use of hot packs.

As brought out earlier herein the subject of splinting in the early stage of poliomyelitis is carefully avoided in the committee's report despite the influence which Dr. Key apparently exercised over the committee as a whole.

It will be interesting to learn what action, if any, the National Foundation of Infantile Paralysis will take after it has had a chance to study the committee's report. It has already spent thousands of dollars in training physiotherapists in the Kenny method and according to an Associated Press story under date of June 26 the Foundation has recently set aside $50,000 more "to train men and women in health education to aid in the fight against infantile paralysis."

The report of the A. M. A. Committee for Investigation of the Kenny Treatment of Poliomyelitis contains no word of commendation for the good work which Sister Kenny has done other than that her concept "has stimulated the medical profession to re-evaluate known methods of treatment of this disease and to treat it more effectively."

Howsoever critical the A.M.A. has been at this late date, Sister Kenny's work has been given public acclaim and has gained the interests of powerful forces to the degree that her work will go on. We may ultimately expect an evaluation on the basis of an unprejudiced study of a great number of cases.

According to newspaper reports Sister Kenny reacted to this unfavorable report of the committee in her characteristic forceful manner by direct contradiction of the validity of the report. However, this typical response of hers is no match, in the long run, against a planned program of criticism such as the ruling clique of the A.M.A. is capable of producing.

R.E.D.

PSYCHOBIOLOGIC FACTORS IN POLIOMYELITIS

On the heels of the adverse report of the A.M.A. Commttee for Investigation of the Kenny Treatment in Poliomyelitis[1] comes an illuminating article in the *Archives of Physical Therapy* for June,[2] whch attempts to bridge the gap between the Kenny group of enthusiasts and the so-called orthodox group. Aided by a grant from the National Foundation for Infantile Paralysis, Captain Charles Bohnengel from the Department of Psychiatry, Cornell University Medical College and the New York Hospital, studied the concepts and technic of Sister Kenny. He reports that the Kenny group is using psychobiologic methods of observation, experimentation and treatment and therefore brings into view only those phenomena which exist at the psychobiologic level of organismic integration. The other group, using more purely physical methods of study, brings into its field of vision only those phenomena which exist at the anatomic-physiologic level of organismic integration. He points out that both groups tend to lose sight of the fact that two sets of symptoms may be coexistent not only in the same individual but in the same muscle.

Bohnengel credits Sister Kenny with bringing to the attention the psychobiological reaction to poliomyelitis which had been neglected by physicians who attempted to deal only with "paralysis" which was thought to bear a direct relationship to destruction of anterior horn cells. Sister Kenny introduced three more symptoms—"spasm," "mental alienation" and "muscular incoordination." While "spasm" like paralysis appears to be a direct result of the disease process, "mental alienation" and "muscular incoordination" appear to be in the nature of psychobiologic reactions to the effects of the disease. "Mental alienation" may be subdivided into the psychobiologic symptoms of psychosensory (proprioceptive) dissociation and psychomotor dissociation.

It appears from Bohnengel's study that the Kenny method has been successful because it takes into consideration the psychobiological organization of the individual which reminds us of the obligation of physicians "to treat not only the disease but the patient as well."

R. E. D.

This issue of THE JOURNAL contains the Proceedings of the fourth annual meeting of the Academy of Osteopathic Orthopedists. Reprints of this very fine group of papers in booklet form will be distributed to members of the Academy. Applications for membership may be secured from the secretary-treasurer, Dr. J. Paul Leonard of Detroit, Mich., who will be in attendance at the American Osteopathic Association War Service Conference, Palmer House, Chicago, July 14 to 18.

1. Ghormley, Ralph K. *et al.*: Evaluation of the Kenny Treatment of Infantile Paralysis. Jour. Am. Med. Assn., 1944 (June 17) 125:466-469.

2. Bohnengel, Charles: Psychobiologic Factors in the Kenny Concept of Infantile Paralysis. Arch. Physical Therapy, 1944 (June) 25: 350-356.

Osteopathic Progress Funds Near First Million Dollar Mark!

Subscriptions Total $962,535.74 as of June 15

Kirksville College Takes Lead From Kansas City With $196,000.00 Pledged and Paid. Subscriptions to and Through National (Overall) Campaign, $147,252.92. Washington State Leads National Campaign With Total of $29,975.00 to and Through Overall!

SUBSCRIPTIONS TO AND AMOUNTS YET NEEDED BY THE OSTEOPATHIC PROGRESS FUNDS AS OF JUNE 15, 1944

FUND	SUBSCRIBED	GOAL	NEEDED
Kirksville College of Osteopathy and Surgery	$196,000.00	$454,900.00	$258,900.00
Kansas City College of Osteopathy and Surgery	189,231.14	250,000.00	60,768.86
Chicago College of Osteopathy	159,567.64	200,000.00	40,432.36
College of Osteopathic Physicians and Surgeons, Los Angeles	147,442.61	250,000.00	102,557.39
Des Moines Still College of Osteopathy	133,401.00	253,000.00	119,599.00
Philadelphia College of Osteopathy	116,878.00	250,000.00	133,122.00
On Hand by A.O.A. Earmarked for Colleges or Overall Fund	20,015.35	Give to the college of your choice or to the Overall Fund! Subscriptions earmarked for the Overall Fund (Plan A in A.O.A. Subscription Form) will be divided equally among the colleges. See Plan B, same subscription form for earmarking your subscription for the college of your choice.	
Totals	$962,535.74	$1,657,900.00	$695,364.26*

Subscribed to or through the A.O.A. (National Overall Campaign) to June 15—$147,252.92. Of this $127,237.57 has been distributed to colleges for which it was earmarked, leaving subscriptions totaling $20,015.35 on hand, earmarked for the Overall or directly for colleges of choice.

*Amount needed, as shown, is less amount on hand in A.O.A. (Overall Fund).

Give to the College of Your Choice
Or to the National Overall Fund!

Department of Professional Affairs

S. V. ROBUCK, D.O.
Chairman
Chicago

BUREAU OF PROFESSIONAL EDUCATION AND COLLEGES

R. McFARLANE TILLEY, D.O.
Chairman
Brooklyn, N. Y.

CHANGES AT DES MOINES COLLEGE

At a meeting of the Corporate Board of the Des Moines Still College of Osteopathy on June 19, the following officers of the college and trustees of the corporation were elected:

Officers of the college: President, Hugh Clark, Ph.D.; secretary, Mrs. K. M. Robinson; treasurer (pro tem), Mrs. K. M. Robinson; dean, O. Edwin Owen, D.O.

Trustees of the corporation: Hugh Clark, Ph.D., Mrs. K. M. Robinson, H. J. Marshall, D.O., L. L. Facto, D.O., R. B. Bachman, D.O., H. A. Graney, D.O., E. F. Leininger, D.O., and Mr. J. R. Capps.

The Standing Committees of the faculty are: Executive—President, Dean and Secretary. Credentials—President and Dean.

At a meeting of the Des Moines Still College Foundation, June 13, the following officers were elected: President, Mr. J. J. Newlin; secretary, Ruth Paul, D.O.; treasurer, Mr. Nels Hansen.

NEW EXECUTIVE VICE PRESIDENT AT K.C.O.S.

Morris Thompson, director of public and professional relations at the Kirksville College of Osteopathy and Surgery has been elected Executive Vice President of the College according to a news item in the *Kirksville Daily Express*. Mr. Thompson will serve as administrative officer and will continue to direct the public and professional relations and the progress fund campaign.

DR. DRESSLER, ACTING DEAN AT PHILADELPHIA

Announcement was made June 27 by Mr. George E. Letchworth, President of the Philadelphia College of Osteopathy, of the appointment of Dr. Otterbein Dressler as Acting Dean of the college, succeeding Dr. Edgar O. Holden, who resigned several months ago. Dr. Dressler is Professor of Pathology at the college and Director of Laboratories at the Osteopathic Hospital of Philadelphia.

COMMITTEE ON SPECIAL MEMBERSHIP EFFORT

FRANK E. MacCRACKEN, D.O.
Chairman
Fresno, Calif.

All membership records have been broken this year. We now have the largest membership ever attained and the smallest nonmembership group in years. Membership for June 1, 1943, 6282; June 1, 1944, 7065, a gain of 783 an all-time high. Nonmembership for June 1, 1943, 4445; June 1, 1944, 3829, a decrease of 616.

Analyzing the June 1 report we find the following forty-seven states and provinces showing gains in membership: Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, Wyoming, Alberta, British Columbia, Nova Scotia, Ontario, Quebec, England.

The states showing the greatest gain in membership are Michigan, first, with 127; Pennsylvania, second, with 101; Missouri, third, with 67.

There were seven states and provinces that show a slight drop in membership. Nine states and provinces remain the same as in 1943. Alabama alone has 100 per cent membership.

The Honor Roll for the year contains the following names:

Dr. Edward Abbott
Dr. Walter E. Bailey
Dr. C. H. Baker
Dr. William Bartosh
Dr. Roswell P. Bates
Dr. Charles Beaumont
Dr. Warren G. Bradford
Dr. William Bugbee
Dr. Vincent P. Carroll
Dr. Randall Chapman
Dr. A. D. Craft
Dr. Wayne Dooley
Dr. Otterbein Dressler
Dr. M. O. Fuerst
Dr. Stephen B. Gibbs
Dr. Mary E. Golden
Dr. Philip E. Haviland
Mr. Dwight James
Dr. Sargent Jealous
Dr. Frank E. MacCracken
Dr. Dorothy Marsh
Dr. J. W. McPherson
Dr. Georgianna Pfeiffer
Dr. C. A. Povlovich
Dr. S. M. Pugh
Dr. C. Haddon Soden
Dr. Talmage T. Spence
Dr. Philip T. Spooner
Dr. C. Robert Starks
Dr. Helen Terhuwen
Dr. Robert B. Thomas
Dr. Ben Thompson
Dr. Carleton Towne
Dr. Kenneth Wiley
Dr. John P. Wood

This will conclude my work as a chairman as we anticipate a reorganization of the Committee at the War Service Conference. To the many members of the profession who have contributed to the success of the activities of this Committee, may I take this occasion to express my deep gratitude for their cooperation.

F. E. M.

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D.C.

INTERNATIONAL LABOR ORGANIZATION MAKES MEDICAL RECOMMENDATIONS

The twenty-sixth Conference of the International Labor Organization, consisting of representatives of the Governments, employers, and workers of forty-one countries, was held in Philadelphia in May, 1944.

The Conference, by a two-thirds majority, adopted recommendations on the following seven subjects:

1. Income security
2. Social security for the armed forces
3. Medical care
4. Social policy in dependent territories
5. Employment in the transition from war to peace
6. The organization of employment services
7. National planning of public works

The Conference recognized as the solemn obligation of the organization to further among the nations of the world a program for the "extension of social security measures to provide a basic income to all in need of such protection and comprehensive medical care." A resolution was passed declaring that it is of national concern and should be among the social objectives of international as well as national policy to "raise standards of living to provide adequate nutrition, housing, medical care and education."

The Conference recommended that the labor supply should be trained or retrained to meet demand, and educational doors be unlocked to those whose schooling was interrupted by the war. The Conference recommended that special and immediate attention should be given to the development of suitable methods and technics of vocational guidance for adult workers. Under the training and retraining program the recommendation was that:

Men and women whose higher training and education has been prevented or interrupted by war service, whether in a military or civilian capacity, or by enemy action, or by resistance to the enemy or enemy dominated authorities, should be enabled to enter upon or resume and complete their training and education, subject to continued proof of merit and promise, and should be paid allowances during their training and education.

(1) Qualified vocational teachers and instructors who have been engaged in other work during the war should be encouraged to resume their previous occupation at the earliest possible moment.

(2) Refresher courses should be organized in case of need.

Student-aid programs were recommended to enable persons above the school-leaving age to continue their education in secondary schools or high schools, and for those beyond the secondary school level, subject to continued proof of merit, in technical or higher education schools or courses on a full-time basis.

(1) Vocational guidance services adapted to their needs should be available for all young persons, both prior to and at the time of leaving school, through the school or the employment service.

(2) Free pre-employment medical examination should be provided for all young persons. The results of this examination should be incorporated in a certificate to serve as a basis for periodical re-examinations during a period to be prescribed by national laws or regulations.

(3) In countries in which war conditions and enemy occupation have undermined the health of young persons, particular attention should be given to the health supervision of such persons from the time of their admission to employment through the period of adjustment to working life, and, where necessary, measures of physical rehabilitation should be adopted.

(4) Members should cooperate, when requested, in providing for the training of medical and nursing staff, and the loan of experienced doctors, surgeons, nursing personnel and appropriate equipment, in order to facilitate the physical rehabilitation of the young persons referred to in subparagraph (3) above.

Secretary of Labor, Frances Perkins, and Senator Elbert D. Thomas of Utah were the United States Government representatives at the Conference. The United States representatives for the workers and for the employers were Mr. Robert Watt and Mr. Henry I. Harriman, respectively.

TRAFFIC IN OPIUM

Congress has asked President Roosevelt to approach all governments of opium-producing countries, urging immediate steps to control the growth of the opium poppy and the production of opium and its derivatives to the amount actually required for strictly medicinal and scientific purposes.

On November 10, 1943, the British and Netherlands' governments announced their decision to prohibit the use of opium for smoking and to abolish monopolies in their territories when those countries are freed from Japanese occupation.

It has been predicted that there will be an increase in addiction among Americans after the war because of the close association of American troops with opium in the far eastern areas, because drug addiction springs from association with drugs and addicts.

In 1937 China produced 2,200 tons of opium, whereas the normal medical needs of the world are about 260 tons. Since 1937 the Chinese National Government has been doing a good job in suppressing opium production.

A substitute for morphine has been discovered in Germany and has been introduced as a medicine in Argentina, Brazil, Colombia and Canada, where it has been made subject to the same control as morphine. While it has no chemical relation to morphine, it has definite morphine-like physical characteristics, and it is habit-forming. It is known as Demerol, but is referred to in legislation as Isonipecaine. It is so referred to in Bill S-1914, introduced by Senator George of Georgia on May 12, 1944, to include it within the term of "narcotic drug" as used in the Federal Narcotic Act. Isonipecaine is defined in the Bill to mean "any substance identified chemically as 1-methyl-4-pheny-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name designated."

All states have enacted the Uniform Narcotic Drug Act, or other adequate drug legislation, except Kansas, Massachusetts, New Hampshire, Vermont and Washington. Some states have enacted an amendment recommended by the Bureau of Narcotics whereby only preparations containing more than 1 grain of codeine to the ounce may be sold without a physician's prescription. An important effect of this amendment is to restrict sales of paregoric to those made pursuant to lawful prescriptions. States in which this amendment is effective are: Iowa, Kentucky, Louisiana, Maryland, Minnesota, Montana, New York, North Dakota, Oregon, Rhode Island, South Dakota, and Wisconsin.

Addicts in increasing numbers, unable to obtain drugs, as a last resort are substituting paregoric and similar preparations which contain small quantities of opiates. Some addicts have turned to barbituric acid derivatives which are known in the underworld as "goof balls."

The report of the Bureau of Narcotics for the year ending December 31, 1943, from which much of the above information is extracted, states that under authority of the Federal law approved June 14, 1930, as amended, the Commissioner of Narcotics, on behalf of the Secretary of the Treasury, continued furnishing the respective licensing boards in the several states with information in cases where licensed physicians, dentists, veterinarians, osteopaths, or pharmacists have been convicted of violations of the Federal narcotic drug laws or had been reported by investigating officers as being addicted to the use of narcotic drugs. Assistance has been rendered these boards in the prosecution of such persons with a view to the revocation or suspension of the licenses issued to them and the consequent withdrawal of their right to purchase, sell, or dispense narcotic drugs.

QUINIDINE RESTRICTED

Paragraph (*e*) of War Production Board Conservation Order M-131, as amended June 9, 1944, restricts the delivery of quinidine to ultimate consumers and provides that only such deliveries may be made upon receipt of a prescription signed by a physician who is licensed to prescribe drugs. As defined in the Order, "'Quinidine' means quinidine alkaloid obtained from cinchona bark, and its salts and derivatives."

Paragraph (*e*) of the Order reads as follows:

"(*e*) Restrictions on all deliveries of quinidine to ultimate consumers. Any person who wishes to get quinidine for consumption and not for resale must furnish the supplier with a physician's prescription. This paragraph applies to all deliveries of quinidine to the ultimate consumer. No person shall deliver quinidine to an ultimate consumer except upon receipt of a written prescription signed by a physician licensed to prescribe drugs, which shall state either that the quinidine prescribed is to be used for the treatment of cardiac disorders or 'Pursuant to War Production Board Order M-131, paragraph (*e*).' No quinidine shall be delivered pursuant to a prescription which is written for more than fifty 3-grain tablets or capsules or for the equivalent of 150 grains of quinidine in other dosage forms. No delivery of quinidine shall be made pursuant to a prescription which is used a second time to obtain additional quantities."

REPORT OF THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.

The report of the national Foundation for Infantile Paralysis, Inc., shows that during the fiscal year ending February, 1943, the Foundation made grants and appropriations totalling $1,278,836.04 in five main categories: virus research, aftereffects research, education, medical publications, and epidemics and public health.

In virus research grants totalling $478,632.66 were authorized during the year. Investigations have been carried out in various laboratories to determine the nature of the viruses which cause infantile paralysis, but no one factor has yet been proved to be important. A careful study of immunity has been made, but results have been indecisive. The curative action of drugs in the treatment of infantile paralysis is rendered difficult by the uncertain clinical course of the disease. Two hundred drugs were studied, none of which proved to have any value in controlling the infection.

In spite of the efforts of great scientists, "little is known of the nature of the virus which produces the disease or its method of spread from patient to patient. The exact role of flies, mosquitoes, water or food in its transmission is still uncertain. There is no drug known which will prevent or cure. No method of immunization has been developed. No one knows the factors that determine whether a child will have a mild, undiagnosable case, or whether there will be paralysis, or death. These are problems that require research and the attention of the best intellects of our day."

Diagnosis and Treatment

Appendicitis in Infants and Children*

A. G. REED, D.O.
Tulsa, Okla.

The study of appendicitis in children is largely a study of inflammation of lymphoid tissue. Histologically, the child's appendix is composed of serous, muscular, submucous and mucous layers, but practically the proportion of the lymphatic tissue located in the inner coats comprises the major portion of the organ. Because of the preponderance of lymphoid tissue, the term "abdominal tonsil" has been applied to the child's appendix.

Location.—The location of the appendix is extremely variable. Embryologically the appendiceal region begins on the left side, migrates toward the liver then descends into the right iliac region as the child matures. In the average child the appendix is superior in location as compared with that in the adult. It may be found anywhere from the gall-bladder region to the true pelvis, even on the left side when the prenatal migration fails to occur.

Size.—The child's appendix is comparatively large. It may vary from a slight evagination from the cecum to six inches in length; the average is from two to two and one-half inches. On cross section the width averages about one-fourth inch. The lumen is rather irregular, being largest at the distal end and smallest at its junction with the cecum. At this point the constriction is quite decided. This fact accounts for much reaction in the event of involvement.

Structurally the child's appendix is weak. Lack of adequate muscular tissue, the extreme thinness of the peritoneum, and the preponderance of soft lympathic tissue render it incapable of resisting pressure to any considerable degree.

Incidence.—Being a disease primarily of early adult life, the incidence of appendicitis varies directly with the age of the child; that is, the younger the child the less likely the attack. Records purport to reveal that children have been born with appendicitis. It is unusual before the second year. However, there is definite likelihood that many attacks are erroneously diagnosed as colitis or indigestion, only for the true condition to be discovered at postmortem or recovery experienced. Certainly recurrent attacks of indigestion in the small child without evident cause should cause concern as to the condition of the appendix. Repeated attacks of colitis often eventually involve this tissue.

Among infants males are more often attacked than females. In one rather extensive series the ratio was two to one.

Etiology.—But little is definitely known as to causation of juvenile appendicitis. Families in which the attacks are common should put one on his guard. Trauma can be a cause.

Social rank or physical development seem to bear no relation to appendiceal pathology. The well-nourished enjoy no immunity nor need the ill-nourished be particularly uneasy.

The presence of foreign objects is so unusual as to be novel. Fecal concretions occur but are not consistently discovered upon surgical intervention in small children. An inflammatory condition develops, perhaps from errors in diets or a generalized colitis or a kinking of the structure. Infection from teeth, sinuses and especially the tonsils may find its way into the appendix to set up a reaction in its lymphoid tissue. Lack of easy and adequate drainage back into the cecum affords an ideal setting for an attack.

Types.—The usual classification of acute and chronic types of appendicitis are recognized in infants and children. The acute type is the usual one among infants. It may be a simple inflammation of the appendix and contiguous structures. In that event it is the *catarrhal* form. If infection develops it is *suppurative*. The one may precede the other or comprise practically separate and distinct entities.

In catarrhal appendicitis the symptoms may be so slight as to escape notice or they may be of alarming severity. The lumen becomes obstructed, edema appears and indigestion is the first thought. Possibly only the inner coats are involved or, if severe, it is not unlike an attack of tonsillitis where the swelling of the lymph tissue becomes pronounced and all adjacent tissues become engourged. A mucous exudate may extrude from the serous covering, forming a plastic layer which readily attaches to the surrounding structures. This frequently gives rise to adhesions in the periappendicular region.

The blood is not greatly disturbed. A slight leukocytosis may occur.

With the subsiding of the inflammatory condition the lymph nodes and tissue undergo retrogressive changes. Debris appears in the lumen to find its way into the colon. The appendiceal coverings become thinned, but seldom to the former degree.

Clinically, the child had a "tummy ache," but diffuse at the onset with a weak fever, 101 to 102 F. The pulse and respiration are in proportion. The tongue is coated and the breath becomes unpleasant. Constipation is the rule with gas formation, but diarrhea is not unusual. Alternate constipation and diarrhea occurs occasionally. If asked, the child indicates that his pain is all over the abdomen. Within from a few hours to a day or two, tenderness in the right iliac fossa may be elicited but no mass is found. Reflex tenderness in the spine should not be overlooked for corroboration. Fear may prompt the child to mislead the examiner, but a tense right rectus muscle cannot be simulated or obscured. This is perhaps the most dependable bit of evidence, but strong pressure must never be employed for fear of rupturing a purulent appendix.

As the inflammation subsides the temperature drops, discomfort disappears and within a few days the child is active again, often none the worse for his attack. If not, then careful investigation should be made to determine where the error has been.

Purulent Type.—Unfortunately not all cases have a happy outcome. In some instances the bacteria (staphylococus,

*Delivered before the twelfth annual Child Health Conference and Clinic, Kansas City, Mo., April 12-14, 1944.

streptococus, pneumococus or most often the bacillus coli) penetrate deep into the lymph tissue of the inner layers of the appendix, even to the serous layer. A more or less violent reaction sets up. The temperature curve elevates quickly, 102 to 103 F., the pain increases in intensity, headache is ushered in, and often but not always nausea and vomiting occur. Frequently the right knee is flexed. Urinary retention may exist. The child is evidently ill. His facies expresses his uneasy condition.

The blood picture becomes important. A leukocyte count of from twenty to thirty thousand may develop with unbelievable rapidity, much more rapidly than ordinarily occurs in the adult. The relative proportion of polymorphonuclear cells increases to from 70 to 80 per cent, or higher. If the general condition remains good and the cell count high, the prognosis is better than should the count decline while the child's general condition becomes more grave.

Presence of pus usually develops in the appendiceal tip. It is not the amount of purulent material that causes the serious illness, but the extreme general toxicity produced. A mass may be discovered but extreme care should be exercised in palpating. Due to the poorly resistant structures, perforation occurs easily. Anticipating such an event, nature if given time prepares a space bounded by adhesions and pyogenic products into which the pus may pass. Here, if successfully contained, a localized abscess, producing a localized peritonitis, will form. If not successful general peritonitis quickly develops. Drainage may be back into the colon either directly or by fistulous opening. Occasionally it is into the pelvis.

With the adult the perforating process is usually quite distinguishable subjectively; in children it seldom is. Sudden sign of collapse, with rapid pulse, pallor and a cold sweat aid in revealing the condition. The temperature drops temporarily but the vitality is quickly lowered. Perforation may come on rapidly following an attack or after several days have elapsed, frequently when our vigilance has lessened.

Compared with the adult the changes due to appendicitis in children occur more quickly and more clouded. Hence, great alertness must be exercised in dealing with them. Information is less dependable as to areas of tenderness, but the child cannot shield the rigid right rectus muscle and the blood picture. These are invaluable in diagnosing the condition.

Chronic appendicitis is seldom seen in children under four years of age. Recurrent attacks of indigestion with loss of appetite, a deranged bowel function with pain and tenderness in the umbilical area are the most constant symptoms. Radiographic examinations aid materially, but of course should not be done during an attack.

Differential diagnosis.—Conditions with which juvenile appendicitis may be confused are few but fairly definite. Pyelitis of the right kidney may simulate appendicitis. Analysis of the urine aids in clearing up the diagnosis.

Pneumonia in the right lower lobe will offer some parallel symptoms, but the right rectus muscle escapes rigidity.

Volvulus and other forms of obstruction usually produce a mass which is easily defined and are not frequently found in the appendiceal area. The blood count is not effected materially.

Simple errors in diet that produce symptoms seldom cause changes in the blood picture. The abdominal symptoms are general and remain so.

Treatment.—With early recognition of appendicitis in children and prompt surgical intervention the mortality is low, around three per cent in one series. Untreated, the mortality is high, 23 to 30 per cent.

Except that the knowledge is not available whether a simple catarrhal form will remain simple makes surgery, even exploratory in doubtful cases, the method of procedure. Rest in bed, ice packs, abstinence from food, and freedom from laxatives and enemas, is rational palliative treatment. The use of sedatives, particularly paregoric, should be interdicted.

Osteopathic treatment to effect relaxation of tense spinal muscles and to relieve nervous tension are always of value. No osteopathic manipulative treatment is ever given the abdomen of even a suspected case, but relaxation through the spinal nerves is always gratefully received by the young infant.

Case History

PNEUMONIA COMPLICATED BY TUBERCULOSIS

DOROTHY CONNET, D. O.
Department of Pediatrics
Kansas City College of Osteopathy and Surgery
Kansas City, Missouri

A boy of five entered the pediatrics clinic during the last week of July, 1941. He came because he did not talk plainly and someone had suggested to his mother that perhaps he had enlarged tonsils and adenoids and their removal might help.

He was given the routine checkup: physical examination; eye, ear, nose and throat examination; complete blood count; urinalysis; tuberculin patch test. The eye, ear, nose and throat department recommended a tonsill- and adenoidectomy. The patch test was positive and the pediatrics department recommended an x-ray of the chest. This was done. Hilar glands were found to be enlarged and lung markings increased in density. In spite of this report the adenoids and tonsils were removed on August 11 and the patient apparently made a good recovery.

About August 25 he returned to our hospital with a chest involvement which was diagnosed, on August 28, though the medium of x-ray, as a "beginning bronchial pneumonia." He received sulfa therapy and was dismissed, apparently recovered, about September 5.

On September 15 he became hoarse and the following morning his mother noticed that he was feverish. On the 17th the mother gave the child a tablespoonful of castor oil and on September 19 a soapsuds enema, with good results. However, he was satisfied to remain in bed and had no appetite. A doctor was called that afternoon and the patient was admitted to the clinical hospital at 3:45 p.m. His temperature was 103.4 F., pulse 140, respiration 44. Physical examination revealed an area of dullness over the lower lobe of the left lung. X-ray showed "an area of beginning pneumonic consolidation involving the middle portion of the left lung." The urinalysis was essentially negative. The blood count was as follows:

Red cells	3,640,000
White cells	19,700
Differential count	
Polymorphonuclears	96%
Lymphocytes	4%
Hemoglobin	70%

Orders included bed rest; liquid diet; osteopathic manipulative treatment, consisting of raising the ribs and splenic and hepatic stimulation every two hours. A heart and lungs specialist was to examine the chest and report his findings. Tuberculous pneumonia was suspected. Steam inhalation with compound tincture of benzoin was given two hours on and

two hours off. Dextrose beverage was given freely and a Numotizine jacket applied.

On the following day, September 20, because of a possible tuberculous involvement Numotizine jacket and the osteopathic manipulative treatment were ordered discontinued "until further orders." Pinene peroxide inhalation was instituted instead of the compound tincture of benzoin. A daily enema and charting of the fluid intake were ordered, also Livitamin, two teaspoonfuls three times a day after meals and ViPenta drops, fifteen minims once daily. On this day the patient's temperature was 101.2 F. axillary at 7:00 a.m. It was 100 F. at 8:00 a.m. and at 1:00 p.m. it was 102.6 F axillary with a pulse of 140. At 4:00 p.m. the rectal temperature was 103.2 F., the pulse 130 and respiration 30. At 11:30 that night the temperature had risen to 104.4 F. rectally and the pulse to 160. The respiratory rate was not charted. The patient perspired profusely during the night. He also coughed some and vomited.

On September 21 another blood count was made:

Red cells	4,200,000
White cells	20,900
Differential count	
Polymorphonuclears	87%
Lymphocytes	13%
Hemoglobin	70%

A daily urinalysis and blood count were ordered. Normal saline with 5 per cent glucose were administered by venoclysis, using 20 cc. for every pound of the patient's body weight. Sulfathiazole therapy was instituted. The initial dose was 15 grains. After that, 7½ grains were administered every four hours. This medication was begun at 8:00 p.m. The midnight dose was vomited together with bright blood and mucus. Laboratory examination for organisms was made, with negative results. The dose was repeated at 1:00 a.m. and vomited at 1:30 a.m.

On September 22 the temperature ranged from 101 to 103 F., pulse from 120 to 142 and respirations from 16 to 20. Sulfathiazole was vomited at midnight. At 1:00 a.m. 1/16 grain morphine sulphate was given. Chipped ice was given to allay nausea.

Blood count	
Red cells	4,150,000
White cells	13,900
Differential count	
Polymorphonuclears	85%
Lymphocytes	15%
Hemoglobin	70%

On September 23 the orders were to discontinue pinene peroxide and use plain steam inhalations instead. Venoclysis was discontinued and proctoclysis instituted, one hour on and one hour off, at the rate of 15 to 20 drops a minute. Aspiration of the chest was ordered because x-ray revealed a fluid level between the seventh and eighth ribs on the left side. No fluid was aspirated.

Blood count	
Red cells	3,670,000
White cells	11,400
Differential count	
Polymorphonuclears	73%
Lymphocytes	25%
Monocytes	2%
Hemoglobin	80%

There was emesis of all medication and nourishment given on this day.

On September 24 the orders were:

1. Discontinue all oral medication until further orders.
2. Give 20 cc. whole blood into gluteal region from a Kahn negative donor.
3. Give, in small amounts, any soft foods or liquids patient will tolerate.
4. Give gentle osteopathic manipulative treatment to the spine every two hours while patient is awake.
5. Discontinue proctoclysis.
6. Steam inhalation continuously.

Before these orders were given the temperature, pulse and respiration were as follows:

	5:00 a.m.	6:00 a.m.	8:00 a.m.
Temperature	101 Rectally	101.4 Rectally	101.2
Pulse	120	126	
Respiration	40	38	
After orders were given:			
	Noon	4:00 p.m.	8:00 a.m.
Temperature	100	99	99.8 Rectally
Pulse		134	120
Respiration		28	30

There was emesis of all medication and liquid until the time of 11:00 a.m. orders. Cracked ice was given for nausea.

Blood count	
Red cells	3,800,000
White cells	14,000
Differential count	
Polymorphonuclears	79%
Lymphocytes	20%
Monocytes	1%

On September 25 the orders were

1. X-ray of chest in both lateral and upright positions.
2. Lacto-Dextrin, drams one in one-half glass of water every two hours. If retained, gradually increase to one tablespoonful in one-half glass of water every two hours.

This day the temperature ranged from 98.6 to 100 F., the pulse rate from 92 to 120, and respiratory rate from 16 to 36. Orange juice was vomited. Osteopathic manipulative treatment was given four times during the twenty-four hours. The patient had a good night.

On September 26 the orders were the same as the day before. There was no appreciable change in temperature, pulse or respiratory rate, or blood counts. Osteopathic manipulative treatment was given three times during the twenty-four hours. The patient retained all food during this time. He had a good night.

On September 27 the orders were:

1. Livitamin, drams one in four ounces of Coca-Cola three times daily. Give drams two, three times daily if possible.
2. Make blood counts every other day instead of daily.

The patient retained all food. He was given osteopathic manipulative treatment five times during the twenty-four hours, and had a good night. His elimination was becoming more nearly normal at this time.

On September 28 the orders were:

1. Give 10 cc. whole blood into gluteal region.

The patient vomited all of lunch (soft diet). Osteopathic manipulative treatment was given four times during the twenty-four hours. The patient had a good night.

On September 29 the patient coughed a good deal, vomiting after each attack of coughing. Osteopathic manipulative treatment was given five times during the twenty-four hours. The patient had a good night, but perspired profusely.

On September 30 the orders were:

1. Discontinue daily enema and give one-half phenolax wafer at bedtime.
2. Give Livitamin in other fluids than Coca-Cola if possible.
3. X-ray chest with patient in upright position tomorrow.
4. Give codeine tablet, grain one-eighth, under tongue when needed for cough.

5. Give corn meal, oatmeal, bran mixture, daily at breakfast as directed.

The temperature this day ranged from 99.8 to 102 F., the pulse taken once was 130 and the respiratory rate 22. The patient perspired profusely during the twenty-four hours. Osteopathic manipulative treatment was given six times. The appetite was somewhat improved.

On October 1 the orders were:

1. Discontinue Lacto-Dextrin and Livitamin.
2. Give Ventriculin (Parke-Davis) grams ten, with breakfast food daily.

Osteopathic manipulative treatment was given three times during the twenty-four hours. The patient vomited supper. There was profuse sweating at times during this twenty-four hours.

On October 2 the orders were:

1. When patient vomits meal, refeed in an hour or two with something easily digested.

Blood count	
Red cells	3,510,000
White cells	14,300
Differential count	
Polymorphonuclears	74%
Lymphocytes	22%
Monocytes	4%
Hemoglobin	70%

Osteopathic manipulative treatment was given four times. Patient vomited undigested food at 8:00 a.m. He perspired freely between 4:00 and 6:00 p.m., but slept well during the night.

On October 3 the orders were:

1. Temperature, pulse, and respiration to be taken at 8:00 a.m., 12 Noon, 4:00 p.m., 8:00 p.m.
2. Discontinue all previous orders and follow attached typewritten orders.
3. Give light osteopathic manipulative treatment to the spine twice daily.
4. Give codeine tablet, grain one-eighth, as needed for cough.
5. Give Ventriculin, grams ten, once daily.
6. Complete blood count every two days.
7. Daily urinalysis.

The temperature ranged from 99.6 to 101.8 F. The patient vomited his lunch and dinner.

SPECIAL INSTRUCTIONS AND DIET
(Attached)

Give one tablespoonful castor oil tonight, and the same once each week.

Milk must be raw—not pasteurized.

Give two tablespoonfuls of cream in a glass of hot water one and one-half hours after breakfast and one and one-half hours after the evening meal. Increase this dose of cream gradually until four times as much is taken in hot water twice daily.

Give one-fourth teaspoonful of calcium gluconate in one-half glass of water at the middle of each meal. (This is done so that the lime will be mixed with the food consumed.)

Breakfast.—Any fruit with cream. Soft boiled egg (1 or 2). Two thin slices whole wheat bread, thickly buttered. Broiled lamb chop (1 or 2). Milk-egg-acid mixture.

Lunch.—Mixed vegetable and fruit salad. Whole wheat bread, thickly buttered. One glass of milk-egg-acid mixture.

To make the mixed vegetable and fruit salad calls for a large bowl into which the ingredients can be put. Use 2 or 3 raw vegetables—lettuce, celery, ripe tomatoes, young carrots, cabbage, beets, turnips, according to their availability; and oranges, grapefruit, ripe bananas, etc. The fruit and vegetables are placed in the bowl and cut fine until the whole is reduced to a juicy mass. This is eaten with a soup spoon, with two thin slices of whole wheat bread thickly buttered.

Dinner.—Thick vegetable soup. Any one of the following: Broiled steak, rare; pot roast, rare; broiled lamb chop; roast chicken; roast beef; boiled fish. Baked potato with the skin can be eaten at every dinner. Any one of the following vegetables: Green peas, carrots, butter beans, beets, spinach, celery, string beans, cauliflower, or any other vegetable in season. Two thin slices of whole wheat bread, thickly buttered. Any light pudding. One glass of milk-egg-acid-mixture.

Make milk-egg-acid mixture as follows: Beat in a bowl, one fresh egg, add enough grade A certified raw (not pasteurized) milk to make a glassful. Mix the egg and milk thoroughly, then add 6 minims of pure dilute hydrochloric acid. Measure the HCL with a 60 minim measure or else in a hypodermic syringe that has the minim markings.

No fried foods of any kind. No pies, pastries, or any food containing sugar in excess. No pork, ham, bacon, sausage or other pork combinations. No thin soups, tea or coffee.

On October 5 the orders were:

1. Discontinue Ventriculin and give instead Ventrex Kapseals, two before each meal.

The temperature ranged from 98.8 to 101.2 F. The patient vomited his dinner following a coughing attack. He had a good night.

On October 6 the orders were:

1. Give 15 cc. whole blood into the gluteal region tomorrow morning.
2. X-ray chest again tomorrow.

No vomiting on this day. Osteopathic manipulative treatment given as ordered.

On October 7 there were no new orders. The patient had a good night and a fairly comfortable day.

On October 8 the orders were:

1. Send all vomitus for examination for micro-organisms.

The patient was coughing frequently during the day. He had a good night.

On October 9 the orders were:

1. Add minims one to each dose of HCL mixture every two days until patient is receiving minims 15 three times a day if he will tolerate it.

The patient was still coughing at rather frequent intervals. The temperature ranged from 99.4 to 101.2 F.

Blood count	
Red cells	4,260,000
White cells	14,750
Differential count	
Polymorphonuclears	70%
Lymphocytes	28%
Monocytes	2%
Hemoglobin	70%

The patient vomited castor oil when given as ordered. He slept well during the night.

On October 11 and 12 there were no new orders. The temperature reached 100.2 F. Less coughing at this time.

On October 13 the highest temperature was 99.4 F. The patient had back rest this day.

Blood count	
Red cells	4,290,000
White cells	14,250
Differential count	
Polymorphonuclears	49%
Lymphocytes	43%
Monocytes	3%
Eosinophils	2%
Basophils	3%
Hemoglobin	60%

The urine had been essentially normal throughout the entire illness except for a slight increase in acidity.

On October 14 the highest temperature was 98.8 F. The patient was coughing less, and sleeping well.

On October 15 Ribothiron tablets, one twice daily, were started.

For the next seven days the child continued to improve. On October 23 he was permitted to go home.

The patient remained in bed at home for about one

month, and received osteopathic manipulative treatment twice a week during that time.

By the end of the month, his temperature remained normal throughout each twenty-four hours. He was kept on the special diet and medication for one year after dismissal from the hospital. At the end of that time, the lungs were x-rayed and were found to be essentially negative. The patient had gained about four or five pounds in weight, and the general health was such that he started to school in the fall of 1942.

Current Medical Literature

AMEBIASIS

Some modern conceptions of amebiasis are presented by Ernest Carroll Faust in *Science* for January 21 and 28, 1944. In 1875 a Russian physician, F. Lösch, first observed and described the active stage of *Endamoeba histolytica* in the dysenteric stools of a patient and at necropsy found motile amebae in material from ulcers of the colon. During the next fifty years the idea that amebiasis was strictly or primarily a tropical disease which usually manifested itself as a fulminating dysentery or a liver abscess became gradually modified. Epidemiologic studies showed that amebiasis was practically cosmopolitan in its distribution. Dysentery and liver abscess were found to be only two of its more dramatic manifestations.

In addition to man the following hosts have been described as infected in nature or susceptible of experimental infection with *Endamoeba histolytica:* dogs, cats, monkeys, rats, pigs, guinea pigs and rabbits, but on the basis of information concerning hosts other than man, it must be concluded that man is primarily responsible for his own infection. The water, food and fly hypotheses of contamination fit into the known facts concerning the epidemiology of amebiasis, but there is little direct proof of any of them. The direct contact hypothesis of contamination is probably applicable to a wide range of unsanitary situations in warm moist climates, but in cooler climates may also apply, particularly to institutional groups, as children's asylums, mental hospitals and prisons.

A clear picture of the levels at which the amebic lesions occur constitutes the essential fundamental background for a clinical appreciation of the disease. Perhaps the most commonly overlooked syndrome which should suggest the possibility of amebiasis, especially in tropical countries, is that of appendicitis. Asyndromic amebiasis may cause general colonic disturbance, nervous symptoms or fatigue. In chronic amebiasis, the lesion is usually secondarily infected with bacteria, which provokes an infiltration of neutrophilic leukocytes. Also a moderate leukocytosis is frequently observed in the circulating blood, so that the blood picture disguises the diagnosis of amebiasis. Amebic invasion of the liver is probably much more frequent than records indicate.

While the internist who has had years of experience in the study of dysenteries can frequently make an accurate diagnosis on the macroscopic appearance of the freshly passed stool, this method does not provide a safe basis for diagnosing amebiasis in its broader aspects. Visualization of the organism can be accomplished from stools, proctoscopic material or after in vitro culture of the ameba.

Today the drugs most commonly prescribed for therapy in the United States are emetine hydrochloride, carbarsone, chiniofon and diodoquin. Emetine hydrochloride is the only known eminently satisfactory preparation for the treatment of amebic hepatitis and amebic liver abscess. In intestinal amebiasis, its usefulness consists primarily in the control of acute symptoms, but it cannot be guaranteed to terminate infection when given within the limits of safety. For routine treatment of colitis of the acute, chronic, or "carrier" type, carbarsone, chiniofon and diodoquin constitute the present-day choice of drugs. For patients with arsenic intolerance one of the iodo preparations should be used. For a short course of treatment, chiniofon is most likely to eliminate the infection, but it sometimes provokes a watery diarrhea. Diodoquin appears to have no contra-indications, but requires a longer period of therapy because of its slower absorption rate in the bowel wall.

Experimental evidence suggests that during treatment, the carbohydrate intake should be reduced and that nutritious, readily digested animal protein should be increased. The possible role of vitamins in raising the threshold of resistance to the pathogen has never been given trial, but is suggested by the writer as a subject for intensive study.

Amebiasis is an actual or potential danger to many individuals. Awakening the public to this danger is an essential part of the control program. Meanwhile the practicing physician, according to the writer, can do his part by having a respectful attitude toward amebiasis in his own patients, whether they manifest symptoms or are apparently symptomless.

KATHERINE BECKER

PELVIFEMORAL ANGLE AND HIP DEFORMITY

The pelvifemoral angle, discussed by Walter Salmore, M.D., in *The Journal of Bone and Joint Surgery,* April, 1944, is defined as the backward opening angle formed by the axis of the femoral shaft with Nélaton's line. Henry Milch has called attention to the fact that the present method of estimating flexion deformity of the hip is not dependable for scientific purposes and has provided a more objective measure, the use of the "pelvifemoral angle." The writer has measured one hundred normal hips in accordance with Milch's directions in order to determine the norm for the angle and the clinical adaptability and accuracy of the test.

The determination of the angle is a relatively simple procedure, but requires care and patience in locating accurately the involved bony landmarks which include the anterior superior spine and the tuberosity of the ischium (connecting the two points gives Nélaton's line which passes through the tip of the greater trochanter). After locating the tip of the trochanter, the line of the femoral axis, approximately bisecting the lateral surface of the thigh, can be carefully drawn. The angle thus formed and measured by a protractor determines the size of the pelvifemoral angle. More accurate measurements can be made with the patient in the erect position.

From the writer's study, he states that the pelvifemoral angle is between 50 and 52 degrees in normal adults and children; that it is about 58 degrees in preambulatory children; that height, weight, age, and sex make no material difference; and that the left hip has the same angle as the right. The error caused by discrepancies in locating the involved landmarks does not exceed 5 degrees.

KATHERINE BECKER

UNEQUAL LEG LENGTH FOLLOWING TUBERCULOSIS

The cause of the discrepancy in length of limbs following tuberculosis of the hip in children is presented by Gerald G. Gill, M.D., Oakland, California, in *The Journal of Bone and Joint Surgery,* April, 1944. According to the writer the purposes of the article are, first, to describe the roentgenographic appearance of the premature central closure of the epiphyseal plates about the knee; second, to discuss its possible cause; third, to describe methods of prevention and treatment; and fourth, to present six cases which clearly illustrate the above points. The article is based on fifteen cases of childhood tuberculosis of the hip in which the complication of unequal leg length occurred.

The roentgenographic appearance of the knee lesion is typical. Careful study reveals that the arrest of leg growth follows the formation of a bony lock between the epiphysis and diaphysis at or near the central portions of the cartilage plates, either the upper tibial or the lower femoral, or both.

In all the cases observed, the premature closure of the epiphyseal line occurred on the side of the diseased hip, but there was no evidence that tuberculosis of the knee was the

cause. There was constant presence of marked decalcification due to the long-continued inflammatory process in the hip and to disuse due to extremely long periods of immobilization.

According to the writer, the long bones of the extremity should be measured every six months in children being treated for tuberculosis of the hip. Roentgenographic records should be kept since they show, in permanent form, the actual length of each bone. The growth from each center can be measured by comparison of two sets of films. Cessation of growth of one or two of the centers necessitates determination of the future height of the patient and the future growth of each intact cartilage plate. This knowledge permits immediate decision as to the proper procedures necessary to give equalized length to the legs, satisfactory bodily proportions, and adequate final height. Epiphyseal arrest may be used to its full extent. Decision as to the necessity of lengthening operations may be made in the young child.

Six well-documented cases are presented showing the basis for the management decided upon and the outcome of, or plans for, treatment.

KATHERINE BECKER

DERMATOME HYPALGESIA IN INTERVERTEBRAL DISC INJURIES

In *The Journal of Bone and Joint Surgery* for April, 1944, J. Jay Keegan, M.D., reports the results of a study of 185 cases of herniated lumbar intervertebral disc. He found that a diagnostic area of hypalgesia can be outlined in the majority of cases for each of the nerve roots from the third lumbar to the second sacral. These dermatome areas extend continuously from the foot to the spine and are arranged in logical serial order without significant overlap. This permits the drawing of a new dermatome chart, which makes possible the identification of single nerve-root lesions caused by herniated intervertebral disc or other compression, and accurately localizes the herniation at the disc next above the numbered nerve root.

The nerve root most commonly compressed by the herniated disc is the first sacral, compressed by the fifth lumbar disc. The pain caused by this lesion is commonly termed "sciatic," and radiates from the lumbosacral junction, over the buttock and posterior thigh and leg, to the lateral side of the ankle and foot, and is usually associated with sensory loss.

Orthopedic interpretation of the hypalgesia has tended to explain it on the basis of compression of nerve roots in the intervertebral canal; or organic neurologic signs have been ignored and a loose interpretation of referred, reflex, or neuritic pain has been given. Recognition of the syndrome of lesions of the first sacral nerve root, with its characteristic dermatome hypalgesia and loss of ankle jerk, removes any extraspinal pathology as a possible cause, as this nerve root is entirely intraspinal until its exit through the first sacral foramen.

The fifth lumbar is the nerve root next in frequency to be involved by herniated discs or low-back conditions. The syndrome of fifth lumbar compression is difficult to diagnose, because it has no characteristic reflex loss and does not present an easily outlined area of dermatome hypalgesia.

Compression of the fourth lumbar nerve root is not so common, but presents a very characteristic syndrome. The syndrome of a lesion of the third lumbar nerve root is rather rare. The second sacral nerve root is not involved by a herniated disc unless the herniation is very large and compresses several roots of the cauda equina.

According to the writer, the value of this composite dermatome chart is that it furnishes a key for the diagnosis of individual nerve-root loss in the lower extremity, which is more accurate than the myelogram in typical syndromes of progressive low-back and unilateral "sciatic" pain caused by a herniated disc. Localization of the nerve root involved by the dermatome method is so accurate that persistent pain in a nerve root after unsuccessful surgery of the herniated disc, or from other cause, can be relieved by section of the nerve root involved.

The question arises as to how early stages of pathology of the intervertebral disc can be differentiated from other conditions postulated by orthopedic surgeons as causing low-back pain. The writer is led to suspect that the majority of variable, recurring low-back pains are in reality the early stages of herniating disc. Assuming that a fair percentage of majority of these low-back syndromes result from early herniating disc lesions, the writer asks *why some well-directed manipulation should not be applied in an effort to reduce the early displacements of the nucleus pulposus.* At least, he says, efforts directed in this manner would seem in order with our present knowledge of the frequency of herniated disc.

Because of the greater frequency of herniation of the fifth lumbar disc, more attention should be paid to it in roentgenograms of the lumbar spine. The roentgenologist should be given some indication of the suspected level of the disc involved, based upon the dermatome hypalgesia. Other pathologic conditions observed in roentgenograms should not alter the interpretation of the location of the lesion of a single root by its dermatome hypalgesia.

It is the writer's opinion that a conservative attitude should be maintained with regard to surgery and only the seriously and chronically disabled patients should be operated on. Temporary, disabling low-back pain develops in nearly everyone at some time in his life; much of it is probably related to pathologic conditions in the lower lumbar discs. While prompt relief from the radiating pain usually can be promised after release of the compressed nerve root, there are some possibilities of recurrence from further herniation or from dense adherence of the root in the region of the traumatized disc. The advisability of spine fusion in selected cases is difficult to determine. The writer considers it better judgment and more conservative surgery to withhold fusion until continued low-back pain after disc operation warrants such a procedure.

KATHERINE BECKER

Communications

EMPHASIZING DISTINCTIVE OSTEOPATHY

To the Editor:

I should like to express my appreciation of the splendid series of articles on vertebral joint lesions and the mechanics of vertebral motion by Dr. C. G. Beckwith which have appeared in the last few issues of THE JOURNAL. Also, for the splendid anatomy review of Dr. Angus Cathie in the May JOURNAL. But for the life of me I cannot understand why the editorial department of THE JOURNAL should be so worried about our profession's overemphasizing the "osteopathic lesion" or the "Still lesion."

An unsigned leading editorial of some length in the February JOURNAL quoted from Dr. George M. McCole's book, "An Analysis of the Osteopathic Lesion" and seemed to imply Dr. McCole was inclined to "confine the lesion" when such was not apparent even from the parts quoted.

The editorial writer expressed the sentiment that "to use emphasis to an extreme is in itself dishonest" and says further: "We may even be dishonest in our emphasis upon the immunological or upon the lesion aspects of osteopathy. There is no occasion for undue emphasis upon any of its facets."

Then in the May JOURNAL the leading editorial, headed "The Place of the Lesion in Osteopathy," pursues the same tone. It is signed by Dr. L. V. Strong, Jr. We are told in this editorial that:

"The neurogenic origin of disease is fundamental in osteopathic philosophy. The Still lesion is only a factor . . ." and "While the manipulative aspect of osteopathy cannot be eliminated without destroying its potentialities, on the other hand that aspect cannot be elevated beyond its rightful place without having the 'tail wag the dog'."

No great, raw idea was ever put over without emphasis upon its distinctive features. Osteopathy is still that system

of the healing art, or school of medicine, which in its theory places chief emphasis as a health factor upon the structural integrity, natural immunity, and power of recovery of the body, and in its practice upon the adjustment of structural irregularities, and the normalization of functional activity through manipulation. Incidentally, too, such presentation does not confine osteopathy at all. We built a profession upon such emphasis, and it is neither unsound emphasis nor overemphasis. When we get so broad that we have nothing to emphasize, all facets alike (as these editorials advocate), we will be like the river which broke its banks and flowed out over the sands of the desert. It just disappeared. That is the thing for us to fear rather than that we will overemphasize the fundamentals which distinguish us, and the emphasis upon which brought us to where we are. That being true, such a trend in editorials in our national organization magazine is quite disturbing.

ASA WILLARD, D.O.,
Missoula, Mont.

EDITOR'S COMMENTS

In his first paragraph Dr. Willard charges the Editor with being worried about overemphasis on the lesion, and in paragraphs three and four he states the problem fairly enough, but it may clarify our thinking to quote one more paragraph. In the entire editorial, which ran to more than two pages, the only suggestion of overemphasis on the lesion was in the following words:

"We may even be dishonest in our emphasis upon the immunological or upon the lesion aspects of osteopathy. There is no occasion for undue emphasis upon any of its facets. It is a well-balanced branch of science.

"If one of Dr. Still's concepts was more fundamental than another, what was it? Have not some made it appear that the lesion was the foundation of all his thinking? In the long reach of history will not his thoughs concerning the general natural immunity of the living body take on a greater importance than his thoughts relating to the condition which interferes with that immunity?"

Shall we compare this with what the late Dr. Michael A. Lane wrote in 1914? He said:

" . . . [Dr. Still's] various theories . . . at least two were of prime order and absolutely true and good. These were first, his theory of the mechanical (anatomical) lesion, and secondly, his theory of the chemical immunity of the body . . . both of which have absolutely stood the test of time and subsequent scientific criticism and experiment. The scientific historian of the future, who will write at a time when all prejudices of professional jealousy and hate will have been lost in the great historical perspective, will probably regard Dr. Still's greatest contribution to science as being his theory of immunity rather than his wonderful perception of the mechanical origin of so-called disease. For it is a fact that while the great conception of the osteopathic lesion was directly responsible for the grand dramatic debut of osteopathy and its seemingly miraculous cures, more recent knowledge and understanding of osteopathic treatment and its results have called attention in a striking and startling way to Dr. Still's other grand and primary conception of the body's natural immunity; a conception primary in every sense of that word; for it is upon this great fact of nature that the osteopathic lesion, with all it means to the [osteopathic physician] and the diseases he works in, hangs. Dr. Still in his own mind and his own writings placed this great natural immunity of the body first in order, and then followed it up with the correction of the lesion, by which procedure the defensive and hence curative mechanism of the body was given free play."

Neither of the editorial writers quoted by Dr. Willard objects to emphasis. Both have a lively appreciation of what a dead world this would be without emphasis. Dr. Willard has read into the editorials something absolutely not there when he says that they take the position "that we have nothing to emphasize." On the other hand, no one can justify the statement that there has been no overemphasis. Never have there been one hundred persons interested in any subject without overemphasis. Still less could there be one thousand or ten thousand persons in one field with no one guilty of overemphasis.

Dr. Willard would be the first to agree that although the mechanical principle, properly applied, has made more endurable the life of many a person suffering from nonoperable cancer, yet the person who advocates manipulation as a cure for cancer is guilty of overemphasis. And he will agree also that some osteopathic physicians, graduates of approved colleges of osteopathy, have been guilty of that overemphasis.

R. G. H.

To the Editor:

In my judgment, the June issue of THE JOURNAL is one of the best in variety of subject matter and the ability with which writers have expressed themselves that I have read for many a day. I was impressed particularly with two articles, viz.: that entitled "A.M.A. Inspection of Osteopathic Colleges?" and the editorial entitled "Following in Our Footsteps."

I wish it were possible to have these articles reproduced in every paper throughout the country that the public might see and know the character of the propaganda the A.M.A. is putting forth to destroy all opposition. It is quite clear to me that osteopathy will experience the greatest onslaught in the near future it has ever experienced. They are marshaling all their forces, and from their arsenal of misrepresentation as propaganda, will spend any amount of money and time to secure legislation inimical to osteopathy. This should awaken the profession to the imminent dangers that confront us, and stimulate our determination to thwart our enemies by a prodigal outpouring of funds to maintain and strengthen our colleges, and seek support of our lay friends for ultimate endowment.

I wish I were forty years younger and physically able to join forces in our efforts to perpetuate the principles enunciated by the Old Doctor. We cannot afford to let the world be robbed of the benefits inherent in our school of practice. I trust that our organization will fight to the limit to maintain our rights as an independent school of therapy.

JAMES L. HOLLOWAY, D.O.

Book Notices

THE PERMEABILITY OF NATURAL MEMBRANES. By Hugh Davson, D.Sc., Associate Professor of Physiology at Dalhousie University, Canada; formerly Demonstrator in Biophysics and Beit Memorial Fellow University College, London, and James Frederic Danielli, D.Sc., A.I.C., Beit Memorial Research Fellow and Fellow of St. John's College, Cambridge, England. Cloth. Pp. 361, with figures and charts. Price $4.75. Cambridge: At The University Press. New York: The Macmillan Company, 1943.

This is a very recondite study of osmosis. The various methods of study which include chemical, volumetric, hemolytic and electrical, are set forth in great detail. The perfusates are grossly divided into electrolytes, nonelectrolytes and gases. Permeability of membranes to lipoids and proteins and the lipoid and protein composition of the membranes, receive a great deal of attention. The passage of drugs, venoms, toxins, receive slight consideration but a chapter is devoted to the effect of narcotic substances. It is noted that living membrances behave differently than do dead ones and that working membranes behave differently than do resting ones. Secretion is discussed as an active process. The size and the sign of ions and the dissociation of molecules have a distinct bearing on permeability and electrical potentials and osmotic pressures influence permeability in a large measure. Several mathematical equations are included in the search for a universal equation. This seems to have been found for nonelectrolyte substances but not for electrolytes. The value of the volume to physicians would be greatly enhanced if more space were devoted to selective permeability,

to hydrostatic-osmotic ratios and to the influence of sodium, potassium and calcium on permeability. The work of Cowles, 1916, on sodium and calcium as it pertains to an oil-water emulsion and a water-oil emulsion is recalled. In the chapter on hemolysis a more thorough discussion of the fragility of the corpuscle and the significance of fragility tests would seem desirable. In the last chapter the theories of cell permeability are well summarized and facts educed in support and in contradiction. The volume as a whole marshals data buttressing an abstruse theory and has little to recommend it to those whose interests are not highly specialized.

L. V. STRONG, JR. D.O.

APPLIED ANATOMY OF THE HEAD AND NECK. By Harry H. Shapiro, M.D., Assist. Professor of Anatomy, College of Physicians and Surgeons, Columbia University. Cloth. Pp. 189, with 173 illustrations. Price $5.50. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia, 1943.

This book was written specifically for students and practitioners of dentistry, and presents material for their particular field in the traditional manner of applied anatomy texts in other fields, namely by the correlation of clinical applications from actual practice. The author has been generous in supplying adequate illustrations of the subject material, including many photographs. Of particular interest is the section on maxillo-facial war injuries, which calls attention to the role of the dentist in the care of these cases in cooperation with the plastic or general surgeon.

C. R. NELSON, D.O.

(Book Notices continued on ad page 29)

State Boards

Alabama

Professional examinations October 24-26. Address B. F. Austin, M. D., secretary, State Board of Medical Examiners, Department of Public Health, Montgomery 4.

Arizona

Basic science examinations September 19. Applications should be on file two weeks prior to examination. Address the secretary-treasurer, Robert L. Nugent, M.D., University of Arizona, Tucson.

Professional examinations can be arranged at any time for applicants. Those who wish to take professional boards must have basic science certificates. Address V. W. Kilcrease, secretary, Arizona State Board of Osteopathic Examiners, Box 486, Casa Grande.

Arkansas

L. J. Bell, Helena; A. H. Sellars, Pine Bluff; E. M. Sparling, Hot Springs; Charles A. Champlin, Hope, and P. W. Lecky, Eldorado, are members of the Osteopathic Board of Examiners.

The officers are: President, Dr. Bell; vice president, Dr. Sellars; secretary-treasurer, Dr. Champlin.

Colorado

Basic science examinations September 13, 14. Applications should be on file two weeks prior to examination. Address Esther B. Starks, secretary, 1459 Ogden St., Denver 3.

Kansas

Forrest H. Kendall, Holton, has been appointed to the State Board of Osteopathic Examiners for a four-year term.

Kentucky

Examinations September 11-13. Address Carl J. Johnson, 514 Breslin Medical Arts Building, Louisville.

Michigan

Basic science examinations October 13, 14, concurrently in Ann Arbor and Detroit. Address the secretary, Eloise LeBeau, 101 N. Walnut St., Lansing 4.

Minnesota

Basic science examinations October 3, 4. Applications should be on file two weeks prior to examination. Address J. C. McKinley, M. D., secretary-treasurer, 126 Millard Hall, University of Minnesota, Minneapolis 14.

In view of the change in college schedules an examination can be arranged at any time for applicants. Those who wish to take the osteopathic examination must have basic science certificates. Address George F. Miller, secretary, State Board of Examiners in Osteopathy, 601 Dayton Ave., St. Paul.

Nebraska

Basic science examinations October 3, 4 at University College of Medicine, Omaha. Address Mr. Oscar F. Humble, director, Bureau of Examining Boards, State House, Lincoln.

New Hampshire

Examinations September 7, 8, State House, Concord. Address Agnes Brennan, executive secretary-clerk, State House.

New Mexico

Examinations at any time when it is necessary to license new graduates. Those who wish to take the osteopathic examination must have basic science certificates. Address H. E. Donovan, secretary, State Board of Osteopathic Examination and Registration, Raton.

New York

Examinations September 11-14. Applications should be on file not later than fifteen days prior to examination. Address Mr. Charles B. Heisler, director, Division of Professional Education, State Education Bldg., Albany.

Puerto Rico

Professional examination September 5. Address O. Costa Mandry, M. D., secretary-treasurer, Board of Medical Examiners, San Juan.

Rhode Island

Examinations October 5, 6. Address W. B. Shepard, secretary, Board of Examiners in Medicine, 911 Industrial Trust Bldg., Providence.

South Carolina

Nancy Hoselton, Columbia; M. V. Huggins, Columbia; E. W. Pratt, Charleston and H. H. Stubblefield, Greenville, are members of the Osteopathic Board of Examiners.

The officers are: President, Dr. Hoselton; secretary, Dr. Huggins.

South Dakota

Professional examinations can be arranged at any time for applicants. Those who wish to take the osteopathic examination must have basic science certificates. Address James H. Cheney, secretary-treasurer, State Board of Osteopathic Examiners, 207 Paulton Bldg., Sioux Falls.

Wisconsin

Basic science examinations September 23 at Madison. Address Robert N. Bauer, secretary, Basic Science Board, Room 384, 152 W. Wisconsin Ave., Milwaukee 3.

Wyoming

Examinations first week in October. Address M. C. Keith, M. D., secretary, State Board of Medical Examiners, Capitol Bldg., Cheyenne.

Canada

Alberta

Examinations during week of September 18. All applications must be on file by August 15. Address Mr. A. E. Attewell, registrar, University of Alberta.

Meetings

American Osteopathic Association War Service Conference. Forty-Eighth Annual Meeting, Palmer House, Chicago, July 14 to 18, inclusive. Program Chairman, Paul van B. Allen, Indianapolis.

Academy of Applied Osteopathy, Palmer House, Chicago, July 12, 13.

American Association of Osteopathic Colleges, Palmer House, Chicago, July 12, 13.

American Association of Osteopathic Examiners, Palmer House, Chicago, July 14.

American College of Neuropsychiatrists, Palmer House, Chicago, July 16.

American College of Osteopathic Internists, Del Prado Hotel, Chicago, July 12, 13. Program Chairman, E. E. Congdon, Lapeer, Mich.

American College of Osteopathic Obstetricians, Palmer House, Chicago, July 13.

American College of Osteopathic Pediatricians, Palmer House, Chicago, July 17.

American College of Osteopathic Surgeons, Hotel Statler, Detroit, October 10-15.

American Osteopathic Association of War Veterans, Palmer House, Chicago, July 17.

American Osteopathic Golf Association, LaGrange Country Club, July 17.

American Osteopathic Hospital Association, Palmer House, Chicago, July 14, 15.

American Osteopathic Society of Herniologists, Severin Hotel, Indianapolis, July 12, 13. Program Chairman, H. R. Stalbohm, Lima, Ohio.

American Osteopathic Society of Ophthalmology and Otolaryngology, Kansas City, Mo., October 11-13.

American Osteopathic Society of Proctology, The Breakers, Cedar Point, Ohio, July 12, 13. Program Chairman, Wm. R. Bairstow, Warren, Pa.

Association of Osteopathic Publications, Palmer House, Chicago, July 17.

Auxiliary to the American Osteopathic Association, Palmer House, Chicago, July 13-18.

Indiana, Antlers Hotel, Indianapolis, Sept. 17-19. Program Chairman, C. R. Blackburn, Greenfield.

International Society of Osteopathic Ophthalmology and Otolaryngology, Kansas City, Mo., October 12-15. Program Chairman, Ralph Licklider, Columbus, Ohio.

Kansas, Allis Hotel, Wichita, October 3-5. Program Chairman, J. F. Dinkler, Emporia.

Maine, Bangor, November.

Michigan, Post Graduate Assembly and Meeting of House of Delegates, Book-Cadillac Hotel, Detroit, October 23-26. Program Chairman, Neil R. Kitchen, Detroit.

Missouri, Hotel Coronado, St. Louis, October 16-18. Program Chairman, David K. Copeland, Joplin.

National Board of Examiners for Osteopathic Physicians and Surgeons, Palmer House, Chicago, July 14-17.
New York, Hotel Syracuse, Syracuse, October 7, 8. Program Chairman, Allen S. Prescott, Syracuse.
Oklahoma, Skirvin Hotel, Oklahoma City, October 3-5. Program Chairman, C. F. Stauber, Oklahoma City.
Osteopathic Vocational Group of Rotary International, Palmer House, Chicago, July 15.
Osteopathic Women's National Association, Palmer House, Chicago, July 13, 17.
Pennsylvania, Harrisburg, September 15, 16. Program Chairman, George J. Moeschlin, Lebanon.
Society of Divisional Secretaries, Palmer House, Chicago, July 14.
South Dakota, Huron, early Fall. Program Chairman, W. L. Huetson, Hudson.
Tennessee, Memphis. Fall.
Vermont, Bonnie Oaks, Fairlee, October 4, 5. Program Chairman, Eva W. Magoon Somerville, St. Johnsbury.
West Virginia, Daniel Boone Hotel, Charleston, May 20-22, 1945.

OFFICIAL AND AFFILIATED ORGANIZATIONS

ARKANSAS

State Society

At the forty-third annual meeting held in Little Rock, April 29, D. B. Whitehead, Atlanta, Texas, spoke on "Diagnosis" and John Werner, Jonesboro, on "Reflexes." Walter E. Bailey, president of the American Osteopathic Association gave a talk on the activities of the national Association.

CALIFORNIA

Los Angeles County

The following are the officers: President, W. D. Baker, Los Angeles; president-elect, R. J. Chapman, Burbank; secretary-treasurer, C. J. Mount, Los Angeles.

COLORADO

State Society

At the meeting April 29, 30 at Denver the following officers were elected: President, E. J. Lee, Greeley; vice president, Harold M. Husted, Denver; secretary-treasurer, C. R. Starks, Denver. The trustees are: N. E. Atterberry, Denver; M. M. Vick, Loveland; F. E. Johnson, Colorado Springs; B. C. Maynard, Grand Junction.

The committee chairmen are: Membership, Dr. Husted; vocational guidance, H. L. Will, Colorado Springs; public health and education, R. R. Daniels, Denver; industrial and institutional service, Dr. Atterberry; program, O. D. Fry, Colorado Springs; public and professional welfare, Edward W. Murphy, Denver; public policy, Howard Lamb, Denver, and Dr. Husted; veterans affairs, H. I. Magoun, Denver; certification and allocation, Dr. Vick.

El Paso County

At the meeting May 10, in Colorado Springs, the following officers were elected: President, Fred E. Johnson, re-elected; vice president, A. Hollis Wolf; secretary-treasurer, Anna J. Barnes, re-elected; all of Colorado Springs.

DISTRICT OF COLUMBIA

At the meeting May 23, the following officers were elected: President, Paul H. Hatch; vice president, Clarence R. Cook; secretary-treasurer, Lawrence R. Bower.

GEORGIA

State Society

"The Life and Future of Osteopathy in Georgia" was the keynote for discussion at the annual meeting May 18, 19 at the Hotel Dempsey in Macon.

The following officers were elected: President, D. C. Forehand, Albany; vice president, John W. Phelps, Atlanta; secretary, Kenneth H. Wiley, Atlanta, re-elected; treasurer, M. Lillian Bell, Decatur. The trustees are: Hassie Trimble, Moultrie; Everett Jones, LaGrange and A. W. Chaplin, Macon.

The committee chairmen are: Membership, Dr. Bell; professional education, Dr. Wiley; ethics and censorship, Frank Jones, Macon; vocational guidance, Dr. Wiley; public health and education, Robert K. Jones, Atlanta; industrial and institutional service, Ben Williams, Columbus; clinics, Dr. Glass; publicity and legislation, D. L. Anderson, Atlanta; statistics, Dr. Wiley; veterans' affairs, Grover Jones, Macon; radio, Dr. Frank Jones; speakers bureau, Dr. Forehand; professional liability insurance, Ruth Glass, Atlanta; professional development, H. H. Trimble, Jr., Moultrie.

IDAHO

State Society

The thirty-ninth annual meeting was held in Twin Falls, May 27, 28. The following program was presented: "Osteopathic Principles and Treatment in Acute Infectious Diseases," "Diagnosis and Treatment of Cardiac Irregularities," "Hypertension and Treatment," "Low-Back Pain—Cause and Treatment, with x-ray pictures," Lonnie L. Facto, Des Moines, Iowa. (Dr. Facto also conducted round-table discussions.) "Differential Diagnosis and Treatment Factors Pertinent to Rectal Pathology," L. D. Anderson, Boise. Dr. Anderson's paper was discussed by O. W. Rose, Twin Falls.

Susan B. Kerr, McCall, assumed the presidency. Officers elected are as follows: president-elect, W. K. Eagan, Blackfoot; secretary-treasurer, F. H. Thurston, Boise, re-elected.

ILLINOIS

Fourth District

On April 20, at El Paso, the following officers were elected: President, Paul G. Clark, Chenoa; vice president, Sam W. Axtell, Lexington; secretary-treasurer, Cecile O. Thompson, Peoria. R. P. Armbruster, Pontiac, is filling the unexpired term of M. D. Sours, Bloomington, as trustee.

A meeting was held May 25, at Morton. C. E. Cryer, El Paso, spoke on "Endocrinology," and conducted a general discussion on the subject. X-ray pictures were also shown.

INDIANA

State Society

The following program is announced for the War Service Conference to be held at the Antlers Hotel, Indianapolis, September 17-19: "Care of Traumatized Joints," "Differential Diagnosis of Low-Back Pain," "The Problem of Posture," C. Robert Starks, president-elect of the American Osteopathic Association; "Positive Sacroiliac Correction," "Thoracic and Cervical Lesions," Harold I. Magoun, president Colorado Osteopathic Association. If time permits Dr. Magoun will also speak on "Body Mechanics in Disease Production." Russell C. McCaughan, executive secretary, American Osteopathic Association, is also scheduled to speak.

Fourth District

Professor R. L. Greene of the University of Notre Dame spoke on "Chemistry of Foods" at the meeting May 17, in Buchanan.

IOWA

Fifth District

Plans to enlarge the Sioux City Osteopathic Hospital were discussed at the semi-annual meeting April 30.

Polk County

At the meeting May 26, the following officers were elected: President, John Woods; vice president, Beryle Freeman; secretary, Rachel Payne; treasurer, Leo D. Luka, all of Des Moines.

KANSAS

Arkansas Valley

At the meeting in Larned on April 20, B. L. Gleason, Larned, discussed prenatal care.

The following officers were elected at the meeting May 10, at Larned; President, H. H. Mettling, Belpre; vice president, J. R. Stanfield, Lewis; secretary-treasurer, M. Uba, Larned. J. W. Morrow, Greensburg, is to replace O. R. Muecke, Pratt, as trustee.

V. R. Cade, Larned, was appointed program chairman.

Central

At the meeting May 18, at the Lamer Hotel, Abilene, the following officers were elected; President, Wm. S. Childs; vice president, L. B. Foster, both of Salina; secretary-treasurer, Lawton M. Hanna, Clay Center. Trustees are: Guy L. Davidson, Frank W. Shaffer, both of Salina and Spencer M. Howard, Manhattan.

The committee chairmen are: Membership, Dr. Hanna; program, Dr. Shaffer, vocational guidance, Lawrence A. Moore, Herington; public health, Dr. Howard.

South Central

Floyd L. Barr, Arkansas City, presented a paper on "Diet in Disease" followed by a round-table discussion, at the meeting at Howard, May 11.

The following officers were elected: President, H. D. Groves, Eldorado; vice president, Robert Buchele, Howard; secretary-treasurer, Richard Gibson, Winfield, re-elected; trustees, A. L. Quest, Augusta; Earl Logsdon, Sedan; C. B. Myers, Madison.

P. W. Gibson, Winfield, was reappointed program chairman.

MAINE

State Society

The following are the officers: President, Roswell P. Bates, Orono; vice president, Francis J. Chase, Ogunquit; secretary, Paul S. Bates, Portland, re-elected; treasurer, Kenneth Russell, Portland, re-elected; sergeant-at-arms, R. Arthur Fish, Greenville. Trustees are: H. H. Campbell; L. M. Hardy, both of Portland; L. M. Morey, Millinocket; Sargent Jealous, Saco, and L. F. Dubay, Waterville.

The committee chairmen are: Public relations, Dr. Chase; exhibitors, R. Johnson, Bath; public health, Wm. Lum, Gardiner; vocational guidance, J. Roberts, Sanford; radio, J. Sinnett, Bangor; veterans affairs, R. Tomes, Kitterly; P. & P. W., L. E. Bilodeau, Eastport; clinics, R. S. Colpitts, Bangor; legislative, True Eveleth, Portland; membership, R. F. Smith, Rumford; hospitals, Dr. Jealous; professional education, E. Gedney, Bangor.

Kennebec and Somerset County

A business meeting was held May 10.

York County

A business meeting was held in March at Old Orchard.

At the April meeting in Kittery, the following officers were elected: President, John Roberts, Sanford; vice president, Francis J. Yukl, Kittery; secretary-treasurer, Richard Wallace, Hollis Center.

Lowell M. Hardy, president of the Maine Osteopathic Association, was the speaker at the meeting in May at Kennebunkport.

MICHIGAN

State Society

Sherwood J. Nye, Pontiac, has been appointed trustee to fill the unexpired term of Emmett Binkert, Carson City. Harry P. Stimson, Highland Park, has been appointed to fill the unexpired term of Harold D. Hutt, Holly.

Kalamazoo Tri-County

At a recent meeting the speakers were: Mr. Paul Avery, director of the county department of social welfare; E. L. Puckett, counsellor for the clearing house committee, and Henry A. Gustafson, field representative of the state vocational guidance and rehabilitation division.

MINNESOTA

State Society

At the recent meeting the following officers were elected: President, Arthur J. Smith, Minneapolis; vice president, E. C. Goblirsch, Little Falls; secretary, M. Sidney Hedeen, St. Paul, re-elected.

MISSOURI

Macon County

At the meeting on April 4, at La Plata, the speaker was William Kelly, Kirksville, whose subject was the use of sulfa drugs in children.

On May 2, at Macon, Dr. C. C. Thorpe, Kirksville, was the guest speaker.

St. Louis

At the meeting held in the Forest Park Hotel, St. Louis, June 20, a motion picture on peptic ulcer was shown.

West Central

Dean J. M. Peach of the Kansas City College of Osteopathy and Surgery was the speaker at the May meeting.

NEW JERSEY

State Society

The following officers were elected at the annual meeting in Newark, May 6: President, Francis A. Finnerty, Montclair, re-elected; vice president, J. Mahlon Beaven, Ridgewood, re-elected; secretary, Hannah W. Bailey, Hasbrouck Heights; treasurer, William C. Bugbee, Montclair, re-elected; G. Woldemar Weiss, Montclair, corresponding secretary and assistant treasurer, re-elected.

Essex County

At the meeting May 16, the following officers were re-elected: President, Fredrick A. Kallmeyer, South Orange; vice president, John H. Beckman, Caldwell; secretary, Edward H. Johnson, Montclair; treasurer, Charles E. Luxton, Jr., Nutley.

Dr. Beckman has been appointed clinics chairman.

NEW YORK

Third District (Central)

The following officers were elected June 3: President, Robert R. Ross; vice president, Tefft T. Bassett; secretary, Wm. S. Prescott, re-elected; treasurer, W. Kenneth Howes, re-elected; all of Syracuse.

The committee chairmen are: Convention program, Allen S. Prescott; convention arrangements, John H. Finley; public health, F. J. Beall, Jr.; industrial and institutional service, Dr. Bassett; public relations, Dr. Finley, all of Syracuse.

OHIO

State Society

At the meeting May 16, the following officers were elected: President, Homer R. Sprague, Lakewood; vice president, Warren G. Bradford, Dayton; secretary, Mr. William S. Konold, Columbus; treasurer, Robert F. Haas, Dayton; trustees: Donald V. Hampton, Cleveland and James O. Watson, Columbus.

The committee chairmen are: Membership, Dr. Bradford; apprenticeship, H. L. Samblanet, Canton; P. and P. W., Harvey C. Seiple, Warren; radio, Robert E. Sowers, Warren; vocational guidance, Robert F. Haas, Dayton; civilian defense, Ralph S. Licklider, Columbus; industrial commission, Frank R. Spencer, Columbus; professional papers, Walter H. Siehl, Cincinnati; general convention chairman, W. D. Burnard, Columbus; convention program, Charles F. Rauch, Logan; historian, Dr. Samblanet; hospitals, C. M. Mayberry, East Liverpool.

First District

The officers are: President, Coit Black, Defiance; vice president, Bruce Hathaway, Upper Sandusky; secretary, Dallas E. March, Bowling Green, re-elected; trustee, N. J. Musson, Fremont, re-elected.

Second and Third Districts

A combined meeting of the Akron and Cleveland societies was to be held June 7 at Twin Lakes. Leonard C. Nagel, Cleveland, was scheduled to speak on "New Trends in Orthopedics."

Fourth District

The officers are: President, P. C. Routzahn, Circleville; vice president, Theodore C. Hobbs, Columbus; secretary, Eugene Runkle, Etna; trustee, Charles Rauch, Logan.

Sixth District

The officers are: President, Peter A. Martin, Norwood; vice president, Stephen Thiel; secretary, Robert C. Fulford; trustee, Walter H. Siehl, the last three named of Cincinnati.

Seventh District

The officers are: President, Wm. Nicholson, Cambridge; vice president, A. P. Sheets, Woodsfield; secretary, Glenn Heigerich; trustee, J. E. Wiemers, the last two named of Marietta.

Stark County

At the meeting May 9, the following officers were elected: President, John W. Keckler, Canton; vice president, David S. Adelman, Massillon; secretary-treasurer, Edmund B. King, Canton.

OKLAHOMA

Kay County

At the meeting March 9, in Newkirk, W. Guy Hudson, Fairfax, discussed "Abdominal Surgery." A round-table discussion was also held.

Northwestern

A business meeting and picnic was recently held at the Alabaster Caverns.

OREGON

State Society

The officers are: President, R. M. Gordon, Salem; first vice president, G. M. Larson, Brownsville; second vice president, G. E. Holt, Pendleton; secretary-treasurer, D. E. Reid, Lebanon.

The trustees are: S. L. DeLapp, Roseburg; P. T. Rutter, St. Helens; I. J. Neher, Portland; B. B. Pruitt, Grants Pass, and O. L. Hutchins, Pendleton.

Willamette Valley

Dr. Charles H. Michel, O. D., spoke on "Vision of Today" at the meeting May 13 at the Eugene Hotel, Eugene.

PENNSYLVANIA

Philadelphia County

At the annual meeting May 18 at Philadelphia, the following officers were elected: President, Frank E. Gruber; president-elect, William F. Daiber; vice president, Arthur M. Flack; secretary, Beatrice Kratz, re-elected, all of Philadelphia; treasurer, Kermit H. Lyman, Brookline; members of the executive council, Jacob B. Rapp and Tammaso Creatore, both of Philadelphia.

RHODE ISLAND

State Society

The officers were reported in the June JOURNAL.

The committee chairmen are: Membership, Ralph B. Craig; professional education, Harrie-Lyman Davenport, Jr.; hospitals, Foster C. True; ethics, W. B. Shepard; vocational guidance, John A. Cowell; legislation, Kenneth Scott, all of Providence; publicity, G. Stevens McDaniel, East Greenwich.

TENNESSEE

Eastern

A business meeting was held May 14, in the Hotel Andrew Johnson, at Knoxville at which the following officers were elected: President, L. A. Mulsand, Sneedville; vice president, Heber Hixon, Chattanooga; secretary-treasurer, Mildred Alexander, Greenback, re-elected.

West

A meeting was held June 7 and 8 at Memphis. Chester L. Farquharson, Houston, Texas, spoke on sacroiliac diagnosis and treatment.

TEXAS

Dallas County

The officers were reported in the June JOURNAL.

The committee chairmen are: Membership, H. L. Betzner; clinics, Robert H. Lorenz; public health, George E. Hurt, all of Dallas.

At the meeting May 25, the district administrator of food rationing program was the speaker.

Fort Worth

Phil R. Russell, Fort Worth, spoke on "Allergies" at the meeting May 15.

The following officers were elected: President, H. M. Walker, Fort Worth; vice president, Dan Beyer, Alverado; secretary-treasurer, Catherine K. Carlton, Forth Worth.

North Texas

W. S. Corbin, Chickasha, was scheduled to talk on the subject of the rehabilitation of discharged war veterans and industrial injuries at the meeting held March 16 in Fort Worth.

WASHINGTON

King County

At the meeting June 6, held at the Gowman Hotel, Seattle, W. E. Merrill, Seattle, spoke on "The Disc Complex;" C. W. Roehr, Seattle, "Ambulant Postoperative Care;" G. S. Fuller, "Diagnostic Significance of Skin Temperature."

The following officers were elected: President, C. Wallace Roehr; vice president, H. G. Bauer; secretary, Arthur B. Cunningham, re-elected; treasurer, George S. Fuller, re-elected; all of Seattle.

WEST VIRGINIA

State Society

At the forty-second annual meeting held May 7-9, at Clarksburg, Alexander H. Trefz, Weston, assumed the presidency. The following officers were elected: President-elect, Harold H. Cudden, Logan; vice president Theron A. Titus, Martinsburg; secretary-treasurer, Guy E. Morris, Clarksburg, re-elected; Trustees: Howard A. Sporck, Wellsburg; Harwood James, Beckley, and Preston B. Gandy, Clarksburg.

The committee chairmen are: Professional affairs, Robert B. Thomas, Huntington; professional education, Robert Coda, Morgantown; professional development, Roy W. Eshenaur, Pt. Pleasant; ethics and censorship, T. H. Lacey, Parkersburg; membership, Benjamin Morris, Clarksburg; visual education, E. E. Sieg, Holliday Cove; hospitals, George C. Eoff, Wellsburg; conventions, Charles McDonald, Charleston; exhibits, E. Stevens Epps, Charleston; program, William J. Morrill, Huntington; public affairs, Dr. Gandy; legislation, W. F. Whitright, Charleston; public health and education, James M. Laing, Beckley; industrial and institutional service, Albert Graham, Wheeling; business affairs, Guy E. Morris, Clarksburg; public and professional welfare, John H. Robinette, Huntington; public relations, Rollo J. Morey, Parkersburg.

WISCONSIN

State Society

At the meeting May 4, the following officers were elected: President, A. W. Muttart, Neenah; president-elect, O. E. Meyers, Kingston; secretary-treasurer, E. J. Elton, Wauwatosa.

The committee chairmen are: Membership, A. M. Kelchner, Sullivan; professional affairs, R. P. Bonham, Milwaukee; hospitals, E. G. Anderson, Janesville; ethics and censorship, S. D. Howe, Racine; vocational guidance, H. R. Bullis, Milwaukee; public health service D. M. Tingley, Milwaukee; industrial and institutional service, H. C. Hagmann, Sturgeon Bay; public and professional welfare, G. C. Heilman, Wauwatosa; statistics, Dr. Elton; convention program, O. E. Meyers, Kingston; convention arrangements, R. E. Davis, Milwaukee; legislation, L. D. Thompson, Green Bay; press, Carl V. Blech, Milwaukee; radio, P. A. Atterberry, Milwaukee; speakers bureau, A. V. Mattern, Green Bay; district affairs, exhibits, H. C. Bahling, Milwaukee.

CANADA

Canadian Osteopathic Association

At the annual meeting held in the Royal York Hotel, Toronto, May 18, the following officers were elected: President, G. A. Dejardine, Ontario, re-elected; vice president, A. E. Wilkinson, Montreal; secretary, J. R. McVity; treasurer, D. E. Firth, both of Ontario.

Ontario

The name of the Ontario Academy of Osteopathy has been officially changed to Ontario Osteopathic Association.

At the meeting May 18 the following officers were elected: President, J. E. Wilson, Barrie, re-elected; president-elect, R. A. Linnen, Ottawa; vice president, C. V. Hinsperger, Windsor; secretary-treasurer, E. S. Detwiler, London, re-elected.

The committee chairmen are: Publicity, M. P. Christianson, Hamilton; professional education, A. G. Davidson, London; conventions, N. W. Routledge, Chatham; P. & P. W., D. E. Firth, Toronto; legislation, J. J. O'Connor, Toronto; industrial and institutional service and insurance, Dr. Linnen; directors, Drs. O'Connor, Firth, Routledge and Davidson.

SPECIAL AND SPECIALTY GROUPS

Central States Osteopathic Society of Herniologists

The officers were reported in the June JOURNAL.

Floyd E. Magee, Indianapolis, was elected Sergeant-at-arms.

New England Osteopathic Association

The officers are: President, Albert E. Chittenden, Auburn, Maine; vice president, Laurence M. Blanke, Dedham, Mass.; secretary, Mildred Greene, Waltham, Mass., re-elected; treasurer, Floyd Moore, Brookline, Mass., re-elected; sergeant-at-arms, John W. Parfitt, Manchester, N. H.; board of directors, M. Carman Pettapiece, Portland, Me., and Osmond R. Strong, Concord, N. H.

DIVISIONAL SOCIETY PRESIDENTS AND SECRETARIES

As of June 28, 1944

DIVISIONAL SOCIETY	PRESIDENT	SECRETARY
Alabama	Meredith White, 432 First Natl. Bank Bldg., Mobile 13	Percy H. Woodall, 617 Frank Nelson Bldg., Birmingham 3
Arizona	E. I. Agnew, 543 E. Speedway, Tucson	C. E. Towne, 916 Valley Bank Bldg., Tucson
Arkansas	J. W. Werner, 110 Warner St., Jonesboro	Chester C. Chapin, 1208 Donaghey Bldg., Little Rock
California	W. T. Barrows, 1924 Broadway, Oakland 12	Charles E. Atkins, 106 S. El Molino, Pasadena 1 Mr. Thomas C. Schumacher, Executive Secretary, 1711 Griffin Road, Los Angeles 31
Colorado	Elmer J. Lee, 204 Coronado Bldg., Greeley	C. R. Starks, 1459 Ogden St., Denver 3
Connecticut	Nester Hotchkiss, 64 Wall St, Norwalk	Robert G. Nicholl, 5 Field Point Rd., Greenwich
Delaware	Merritt G. Davis, 609 W. Tenth St., Wilmington 11	R. H. Rickards, 1308 Van Buren St., Wilmington 12
Dist. of Columbia	Paul M. Hatch, 1818 Jefferson Pl., N.W., Washington 6	Laurence R. Bower, 1246 Monroe St., N.E., Washington 17
Florida	R. Philip Coker, 120 First St., Panama City	Morris P. Briley, 217 E. Jefferson, Tallahassee
Georgia	D. C. Forehand, 610 Exchange Bank Bldg., Albany	Kenneth H. Wiley, 321 Mortgage Guarantee Bldg., Atlanta 3
Hawaii	V. G. Clark, 513 Hawaiian Trust Bldg., Honolulu 43	Mabel A. Runyan, 2333 C. Kalakaua Ave., Honolulu 30
Idaho	Susan B. Kerr, McCall	F. H. Thurston, 600 First Natl. Bank Bldg., Boise
Illinois	Allen H. Miller, 801-02 Rockford Trust Bldg., Rockford	Fred B. Shain, 7106 Crandon Ave., Chicago 49
Indiana	Gail G. Jackson, 612 N. Third St. Vincennes	F. A. Turfler, Jr., 706 J M S Bldg., South Bend 5
Iowa	J. K. Johnson, Jr., Johnson Osteopathic Clinic, Jefferson	Dwight S. James, 600 Walnut Bldg., Des Moines 9
Kansas	C. A. Welker, J. C. Penney Bldg., Concordia	Robert A. Steen, 307 Citizens Natl. Bank, Emporia
Kentucky	Nora Prather, 134 Weissinger-Gaulbert, Louisville 2	Martha Garnett, 417 Fincastle Bldg., Louisville 2
Louisiana	V. L. Wharton, 410 Weber Bldg., Lake Charles	W. Luther Stewart, 525 Johnson St., Alexandria 3
Maine	Roswell P. Bates, 72 Main St., Orono	Paul S. Bates, 650 Forest Ave., Portland 5
Maryland	Louis A. Winokur, 5064 Harford Road, Baltimore 14	Walter H. Waugaman, 33 S. Center St., Cumberland Mrs. Gladys M. Stockdale, Executive Secretary, 524 California St., Newtonville
Massachusetts	Nelson D. King, 319 School St., Watertown	Harry E. Cash, 170 Warren St., Newton Center
Michigan	Robert K. Homan, 13535 Woodward Ave., Highland Park	W. G. Hooper, Executive Secretary, 101½ N. Superior St., Albion
Minnesota	Arthur J. Smith, 730 Metropolitan Bank, Minneapolis 2	Robert H. McDowell, 253 State St., Harbor Beach
Missouri	Charles A. Povlovich, 1001 Chambers Bldg., Kansas City 6	M. S. Hedeen, 1593 University Ave., St. Paul 4 Lawrence Jones, Executive Secretary, 300 W. Washington, Kirksville
Montana	K. D. Kohler, Box 52, Hamilton	Harold D. McClure, 505 S. Davis, Kirksville
Nebraska	C. Eugene Brown, 1702 Second Ave., Nebraska City	J. H. Strowd, Glendive Mr. Russell Bartels, Executive Secretary, 824 First Natl. Bank Bldg., Omaha 2
New Hampshire	Robert E. Maxwell, 7 Concord St., Nashua	John W. Parfitt, 15 Temple Court, Manchester
New Jersey	F. A. Finnerty, 71 Park St., Montclair	William C. Bugbee, Corresponding Secretary, 427 Bloomfield Ave., Montclair
New Mexico	Paul W. Chadwell, Aztec	Hannah W. Bailey, 246 Harrison Ave., Hasbrouck Heights
New York	Howard B. Herdeg, 677 Parkside Ave., Buffalo 16	James L. Cornelius, 1700 N. Fourth St., Albuquerque
North Carolina	Guy Funk, 1503-3A Reynolds Bldg., Winston-Salem 3	Robert E. Cole, 417 S. Main St., Geneva
North Dakota	L. W. Mills, 313-14 Red River Natl. Bank Bldg., Grand Forks	Frank R. Heine, 910 Southeastern Bldg., Greensboro G. Pfeiffer, 110½ Broadway, Fargo
Ohio	Homer R. Sprague, 507 Detroit Warren Rd. Blvd., Lakewood	Mr. W. S. Konold, Executive Secretary, 50 E. Broad St., Columbus 15
Oklahoma	R. D. McCullough, 303 Palace Bldg., Tulsa 3	George R. Thomas, 2307 Classen Blvd., Oklahoma City 6
Oregon	R. M. Gordon, 304 Oregon Bldg., Salem	D. E. Reid, 860 Main St., Lebanon
Pennsylvania	Roy Hughes, 39 S. 6th St., Indiana	George B. Stineman, 510 N. Third St., Harrisburg
Rhode Island	Ragner H. Nordstrom, 574 Broad St., Providence 7	Henry J. Maciejewski, 945 Park Ave., Cranston
South Carolina	George A. Zuspann, 311-13 Central Union Blvd., Greenwood	Joanna M. Barnes, Ridge Spring
South Dakota	E. J. Lachance, Cresbard	E. W. Hewlett, 503 Security Natl. Bank Bldg., Sioux Falls
Tennessee	Stanley C. Pettit, 715½ 31st St., Cleveland	H. A. Terhuwen, 930 Third Natl. Bank Bldg., Nashville 3
Texas	Joseph L. Love, 416 Littlefield Bldg., Austin 15	J. W. McPherson, 418 Allen Bldg., Dallas 1 Mrs. Margaret F. Markes, Corresponding Secretary, 1234 Allen Bldg., Dallas 1
Utah	Charles S. Lawrence, 144 E. S. Temple, Salt Lake City 1	A. E. Houghton, 600-01 Templeton Bldg., Salt Lake City 1
Vermont	C. O. Gaskell, 128 Merchants Row, Rutland	Kathleen A. Hunt, 39 Battell Block, Middlebury
Virginia	Harold Blood, 306 N. Washington St., Alexandria	L. R. Luxton, 22-24 Lambert, Waynesboro
Washington	Manford R. Kint, Bremer Bldg., Bremerton	S. M. Pugh, 3010 Hoyt Ave., Everett
West Virginia	Alexander G. Trefz, 315 Main Ave., Weston	Guy E. Morris, 542 Empire Bank Bldg., Clarksburg
Wisconsin	A. W. Muttart, 107 N. Commercial St., Neenah	Edward J. Elton, 1518 N. 70th St., Wauwatosa 13
Wyoming	Clinton C. Van Vleck, Jackson	G. A. Roulston, 2823 Central St., Cheyenne
British Columbia	Milton P. Thorpe, 727 Birks Bldg., Vancouver	W. C. Atkinson, 1120-26 Vancouver Blk., Vancouver, B. C.
Maritime Osteopathic Assn.	John M. MacLeod, 23 Church St., Moncton, N. B.	Alfred J. O'Donnell, 172 Princess St., St. John, N. B.
Ontario	J. Edwin Wilson, The King Block, 2 Simcoe St., Barrie	E. S. Detwiler, 444 Waterloo St., London, Ont.
Quebec	A. E. Wilkinson, 616 Medical Arts Bldg., Montreal	Fred Marshall, 923 Medical Arts Bldg., Montreal
Saskatchewan	Anna E. Northup, 922 Main St., Moose Jaw	Doris Tanner, 405 Sterling Trust Bldg., Regina
*Canada	G. A. DeJardine, 12 King St., E., Toronto, Ont.	J. R. G. McVity, 2904 Yonge St., Toronto, Ont.
Australia	Wilfred E. Race, 80 Swanston St., Melbourne, C 1	L. Van Straten, 71 Collins St., Melbourne, C 1
British	Russell G. Alexander, Royal London House 196, Deansgate, Manchester	J. J. Dunning, Flat 6, 140 Park Lane, London, W 1

*This is not a divisional society. The provincial organizations and the Maritime association are the divisional societies of A.O.A.

Books Received

MAURICE ARTHUS' PHILOSOPHY OF SCIENTIFIC INVESTIGATION. Preface to De l'Anaphylaxie a l'Immunite, Paris, 1921. Translated from the French, with an introduction by Henry E. Sigerist. Paper. Pp. 26. Price 75c. The Johns Hopkins Press, Baltimore 18, 1943.

TECHNIQUE IN TRAUMA: Planned Timing in the Treatment of Wounds Including Burns. From the Montreal General Hospital and McGill University. By Fraser B. Gurd, M.D., C.M. and F. Douglas Ackman, M.D., C.M., with commentary by Ralph R. Fitzgerald, M.D., C.M., McGill University. Cloth. Pp. 68, with figures and charts. Price $2.00. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia, 1944.

THE TREATMENT OF PEPTIC ULCER. Based upon ten years' experience at the New York Hospital. By George J. Heuer, M.D., Professor of Surgery of Cornell University Medical College and Surgeon-in-Chief of the New York Hospital. Cloth. Pp. 118, illustrated with charts. Price $3.00. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia, 1944.

RADIATION AND CLIMATIC THERAPY OF CHRONIC PULMONARY DISEASES. Edited by Edgar Mayer, M.D., F.A.C.P., F.A.C.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York City; Attending Physician New York and Memorial Hospitals; Special Pulmonary Consultant, New York State Department of Labor; Formerly Member Faculty Trudeau School for Tuberculosis; Director (ex urbe) Northwoods and Will Rogers Tuberculosis Sanatoria, Saranac Lake, New York; Consultant on Tuberculosis to the Government of Cuba; Board Member of the Finlay Institute of the Americas. Cloth. Pp. 303, with illustrations. Price $5.00. The Williams & Wilkins Co., Baltimore, 1944.

FUNDAMENTAL EXERCISES FOR PHYSICAL FITNESS. By Claire Colestock, A.B., M.A., Assistant Director Physical Education, City Schools, Pasadena, California; and Charles Leroy Lowman, M.D., F.A.C.S., Chief of Staff, Orthopaedic Hospital, Los Angeles, California. Paper. Pp. 314, with illustrations. A. S. Barnes and Co., 67 W. 44th St., New York 18, 1943.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Lieut.-Colonel, M.R.C., U. S. Army; Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; Editor of "American Pocket Medical Dictionary." With the collaboration of E. C. L. Miller, M.D., Medical College of Virginia. Ed. 20, revised and enlarged. Flexible and Stiff Binding. Pp. 1668 with 885 illustrations. Price $7.00 plain; $7.50 thumb-indexed. W. B. Saunders Co., West Washington Sq., Philadelphia, 1944.

MEDICAL DIAGNOSIS. By Roscoe L. Pullen, A.B., M.D., Instructor in Medicine, Tulane University of Louisiana School of Medicine; Assistant Clinical Director, Charity Hospital of Louisiana at New Orleans; formerly Fellow in Clinical Endocrinology, Duke University School of Medicine and Duke Hospital, Durham, North Carolina. Cloth. Pp. 1106, with illustrations. Price $10.00. W. B. Saunders Company, West Washington Sq., Philadelphia, 1944.

THE ROMANCE OF MEDICINE. By Benjamin Lee Gordon, M.D., Member American Association of the History of Medicine; Attending Ophthalmologist of the Shore Memorial Hospital, Somers Point, New Jersey, and to Atlantic County Hospital for Tuberculosis, Northfield, N. J., Authorized Medical Examiner for Civil Aeronautics Administration, Dept. of Commerce, Washington, D. C. Cloth. Pp. 630, with illustrations. Price $5.00. F. A. Davis Co., 1914 Cherry St., Philadelphia, 1944.

ARGYROL THE PHYSIOLOGIC ANTISEPTIC

There are important properties in addition to bacteriostasis which make ARGYROL the "Physiologic Antiseptic"—one which works in harmony with the normal defense functions of tissue, nerves, cilia, and circulatory system. Of first importance is the fact that ARGYROL is both antiseptic and decongestive. But there is an EXTRA FACTOR in mucous membrane antisepsis, in decongestion with ARGYROL. This is physiologic stimulation of tissue defense function. It is a combination of physico-chemical and bacteriostatic properties which go far beyond the usual concept of what an antiseptic should do. Write for further details, posological table and booklet of clinical application.

MADE ONLY BY THE A. C. BARNES COMPANY, NEW BRUNSWICK, NEW JERSEY

DETERGENT · PROTECTIVE
PUS-DISLODGING
INFLAMMATION-DISPELLING
SOOTHING · STIMULATING
TO GLANDS, TISSUES

ARGYROL

("ARGYROL" is a registered trade mark, the property of A. C. Barnes Company)

THE MANAGEMENT OF NEUROSYPHILIS. By Bernhard Dattner, M.D., Jur. D., Associate Clinical Professor of Neurology, New York University Medical College. Cloth. Pp. 420, with figures, charts and tables. Price $5.50. Grune & Stratton, Inc., 443 Fourth Ave., New York, 1944.

Book Notices

(*Continued from page* 537)

ROSE'S FOUNDATIONS OF NUTRITION. By Grace MacLeod, Ph.D., Professor of Nutrition, and Clara Mae Taylor, Ph.D., Associate Professor of Nutrition, Teachers College, Columbia University. Ed. 4, revised. Cloth. Pp. 593 with illustrations. Price $3.75. The Macmillan Co., 60 Fifth Ave., New York, 1944.

Mrs. Rose, a long time ago, wrote a book on her experiences in teaching sound nutrition to those with little or no foundation in the underlying sciences. It has proved in many ways so very practical that one edition has followed another and even after the death of the author able teachers who had known and worked with her brought it up to date for this edition.

Numerous well-chosen illustrations make clear what the text is about, whether it be in descriptions of the vitamins, or the effect of nutritional faults in animals. Charts and graphs make plain the instructions for portions and proportions of food. The present editors have continued the author's system of stating amounts of food in terms of shares, based on a unit which is a fraction of the daily requirement.

In the Greater Seasonal Incidence of
PRURITIC AFFECTIONS

With the coming of warmer weather, the occurrence of pruritic skin affections rises sharply. Contact with poisonous plants, food allergies, and toxic insects, all contribute to this greater incidence. While days or weeks may be required to eradicate these dermatoses, relief from the intense, furious itching need not be denied the patient. Prompt application of Calmitol allays all discomfort for several hours, regardless of the nature of the offending toxin or allergen. Calmitol is equally effective against the itching of food and drug poisonings, urticaria, eczema, intertrigo, prurigo, ringworm, and pruritus ani, vulvae, and scroti.

The anti-pruritic properties of Calmitol are due to the valuable pharmacodynamic influence of its ingredients: camphorated chloral, menthol, and hyoscyamine oleate, in an alcohol-chloroform-ether vehicle. A three-fold action is exerted: (1) Sensory impulses are blocked at the afferent nerve endings and cutaneous receptor organs; (2) local active hyperemia encourages resolution of the underlying process; (3) bacteriostasis aids in preventing spread. Calmitol Ointment is thoroughly bland and may be applied safely to infants' skin. • Professional samples on request.

Thos. Leeming & Co. Inc.
155 East 44th Street • New York 17, N. Y.

CALMITOL
THE DEPENDABLE ANTI-PRURITIC

THE 1943 YEAR BOOK OF INDUSTRIAL AND ORTHOPEDIC SURGERY. Edited by Charles F. Painter, M.D., Orthopedic Surgeon to the Massachusetts Women's Hospital and Beth Israel Hospital, Boston. Cloth. Pp. 440, with illustrations. Price $3.00. The Year Book Publishers, Inc., 304 South Dearborn St., Chicago.

The literature of 1943 as presented in this volume is believed by the editor to point to a future which holds promises of radical, if not revolutionary, changes in the practice of orthopedic surgery and the surgery of trauma. Both on the war front and on the home front there are new and intensified problems, and material for observation and study. At best there's but little available on European and Asiatic literature, though some from Scandinavia, and an increasing amount from Latin America. The book is divided into two sections: (1) Orthopedic Surgery and (2) Industrial Medicine and Surgery, which includes problems of organization and the war, absenteeism, fatigue, respiratory diseases, cardiac conditions, specific hazards. As would be expected, several pages are devoted to intervertebral discs. It was not in that connection that the following three interesting paragraphs were written in the Forward:

"As has been the case for the past few years, the profession has been agitated in 1942 and 1943 over the treatment of fractures, particularly regarding the respective values of the external and the internal methods of fixation, and the successes achieved by the employment of these methods, over the value of the sulfa drugs as adjuvants in septic, compound fractures and osteomyelitis, and over the treatment of infantile paralysis, especially as it concerns the Kenny concept of the disease.

"For some little understood reason the medical profession, or some small but easily deluded fraction of it, will now and then seize on any method of treatment that is new and lend it their enthusiastic support long before its efficacy has been demonstrated. This tendency is particularly unfortunate when it concerns a condition much in the lay mind for the lay public is extremely gullible, and it requires a long time before a stampede started by a few overenthusiastic advocates can be halted.

"There is no satisfactory explanation of this oft-repeated phenomenon except that we, as physicians, are dealing with so many situations which are, to date, beyond our power to remedy, that in desperation we grasp at anything that comes over the horizon. Such behavior ought to put the profession in wrong with the public, but apparently by the time the truth is known the public has forgotten and already gone off on another wild goose chase. The most unfortunate feature of it all is that the profession itself fails to remember the frequency with which it allows itself to 'bark up the wrong tree.'"

SULFONAMIDE THERAPY IN MEDICAL PRACTICE. By Frederick C. Smith, M.D., M.Sc. (Med.) F.A.P.S., Editor of *Philadelphia Medicine*, official organ of the Philadelphia County Medical Society; Editor of *The Medical Word;* Lieutenant Colonel, Medical Reserve Corps, Army of the United States. Cloth. Pp. 368 with illustrations. Price $5.00. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1944.

Something of the aim of the book may be judged from the following paragraph in the introduction: "Many have felt that the range of effectiveness of the sulfonamides is so great that much of the burden of diagnosis has been eliminated, that in effect they constiute a cure-all. Far from this being the case, even though any member of the sulfonamide group may strike at the cause of several different diseases, accurate diagnosis remains just as important as ever, and sometimes even more so. Sulfapyridine, for example, is an effective agent against pneumococcal pneumonia, but neither it nor any other sulfa drug has any effect against virus pneumonia nor against the influenzal pneumonia. Pneumonia is a rapidly killing disease with a very high mortality rate, and if one is satisfied in knowing that pneumonia is present without knowing the kind of pneumonia and depends upon sulfa drugs in every case of pneumonia, he will condemn many too trustful patients to untimely graves.

"Neither do the sulfa drugs lend themselves to self-medication by the laity, although articles have appeared in magazines which gave the impression that sulfonamides have eliminated the need for medical supervision."

In his preface Dr. Smith says: "It is with the intention of pointing out the possibilities of the sulfonamides and to emphasize their limitations and their toxic properties that this book has been written."

The book is very largely a compilation of writings by many authors. In selecting a part of these some of this aim may have been missed. With regard to penicillin as well as the sulfa drugs there are places in which the dangers are not sufficiently stressed.

HUMAN CONSTITUTION IN CLINICAL MEDICINE. By George Draper, M.D., Associate Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University, Associate Attending Physician, Presbyterian Hospital, New York City; C. W. Dupertuis, Ph.D., Physical Anthropologist, Constitution Clinic, Presbyterian Hospital, New York City; J. L. Caughey, Jr., M.D., Med. Sci.D., Associate in Medicine, College of Physicians and Surgeons, Columbia University, Assistant Physician, Presbyterian Hospital, New York City. Cloth. Pp. 273 with illustrations. Price $4.00. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1944.

The study of human constitution is a field in which Dr. Draper has been at home for many years. His previous writings on the subject have been of great interest and value and this carries on in the same tradition.

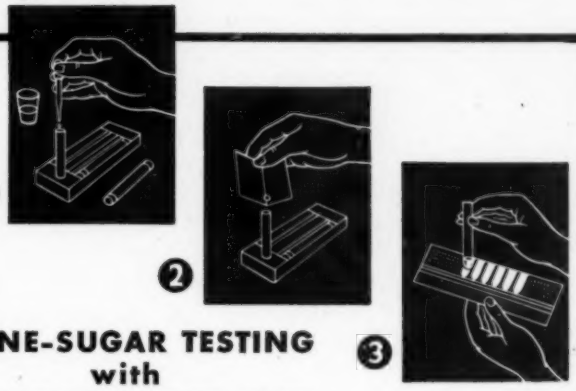
It undertakes to discuss with medical students the essential relation between each individual person and such disease as he may suffer at a given moment. Therefore while primarily concerned with clinical medicine, it yet deals especially with the nature of the human being within the patient. An attempt has been made to utilize any dependable appropriate method applicable to the various aspects of the organism in order to gain further knowledge of man as an animal species and of that species in relation to disease whether physical or mental.

A study of this book will help to explain why the picture of disease in an individual is never the same as that in the book, and also what it is apt to be like in a given individual.

PHYSICAL FOUNDATIONS OF RADIOLOGY. By Otto Glasser, Ph.D., Professor of Biophysics and Head of Department of Biophysics, Cleveland Clinic Foundation, Cleveland, Ohio; Edith H. Quimby, Sc.D., Associate Professor of Radiology (Physics), College of Physicians and Surgeons, Columbia University, New York; Lauriston S. Taylor, Ph.D., Chief of X-Ray Section, National Bureau of Standards, Washington, D.C.; J. L. Weatherwax, M.A., Philadelphia General Hospital and Graduate School of Medicine, University of Pennsylvania, Philadelphia. Cloth. Pp. 426, with figures and charts. Price $5.00. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1944.

The demand by students of radiology for serious instruction in radiation physics has become steadily more urgent in recent years, with many different teachers working out various courses of study, lecture outlines, demonstrations, etc., as has seemed most appropriate for particular groups of students. Four of these instructors have pooled their experiences and produced a book which is elementary, nonmathematical, practical.

Simple as ... 1-2-3-



URINE-SUGAR TESTING with

CLINITEST

(A Tablet Copper Reduction Method)

This refinement and adaptation of the copper reduction methods of Fehling and Benedict introduces several practical advantages for actual use.

FOR LABORATORY

TWO MAJOR IMPROVEMENTS ARE:

Elimination of external heat—sufficient alkali is included so that all heat required for the test is self-generated within the test tube.

Elimination of reagent-measuring—amount accurately controlled by incorporation of standardized dry reagent mixture into Clinitest Tablet.

SIMPLE, SPEEDY TECHNIC

Just drop a Clinitest Tablet into test tube containing proper amount of diluted urine. Allow for reaction—compare with color scale.

Available through your prescription pharmacy or medical supply house. Write for full descriptive literature. Dept. A.O.A.-7.

EFFERVESCENT PRODUCTS, INC.
ELKHART, INDIANA

DOCTOR IN THE MAKING; The Art of Being a Medical Student. By Arthur W. Ham. M.B., Associate Professor of Anatomy, in Charge of Histology, Faculty of Medicine, University of Toronto; Honorary Secretary of the Banting Research Foundation; and M. D. Salter, M.A., Ph.D., Lecturer and Research Fellow in the Department of Psychology, Faculty of Medicine, University of Toronto. Cloth. Pp. 179 with illustrations. Price $2.00. J. B. Lippincott Company, 227 South Sixth Street, Philadelphia, 1943.

While this book is designed primarily for those who are studying medicine or who contemplate doing so, it has in it much that can be of value to those engaged in practice, and since it is fundamental it has values for those preparing for other professions.

Several years ago there was appointed in the University of Toronto an Advisory Committee for students in the first year of the medical course. Its first duty was to investigate by means of personal interviews those students whose records in the first year were not reasonably in accord with what had been predicted for them from an aptitude test and from their past scholastic record. Two members of that committee have prepared this book, in part to show what is necessary besides academic preparation and ability, to bring success as a medical student. It goes into motives and medical equipment, habits of study, attitudes, general personality characteristics. It shows the importance of that "skill in learning" which in many was not acquired at the age when it should have been learned.

Numerous enemies of success are considered, with a chapter each on "Think-

Prescribed by many osteopathic physicians who have found them a valuable aid in treating constipation and those ailments caused by delayed elimination, a loaded colon, and an alimentary system which does not function properly. Helpful in nervousness or neurasthenia, dysmenorrhea, low back pains and other conditions when caused by tight or spastic sphincter muscles. Recommended for relief of post-operative rectal discomfort.

NOT ADVERTISED TO THE LAITY

The dilators are made of bakelite, supplied in a set of four graduated sizes, available at all prescription pharmacies or surgical supply houses. Complete set of four graduated sizes —$3.75. If you dispense, write for special professional prices. Write for brochure.

Mechanical Rectal Dilation often succeeds when other modalities fail.

F. E. YOUNG & COMPANY
443 EAST 75th STREET CHICAGO 19, ILLINOIS

ing That the Important Things Come Later," "The Time-Swindler," "Memory Versus Understanding," "Your Child-Self," and "Understanding and Applying the Scientific Method."

By no means the least important thing in the book is the section on the responsibilities of a medical student. Already he has reached that stage where he can appreciate the fact that the responsibilities of the medical profession are his own.

A TEXTBOOK OF PATHOLOGY. Edited by E. T. Bell, M.D., Professor of Pathology in the University of Minnesota, Minneapolis, Minn. Fifth edition, enlarged and revised. Cloth. Pp. 862, with illustrations. Price $9.50. Lea & Febiger, Washington Square, Philadelphia 6, 1944.

This is the fifth edition of a useful textbook on pathology in which the work of three authors has been well and carefully correlated. Not only has most of the material in the fourth edition been thoroughly revised but also much new material has been introduced including that relating to shock, vitamin deficiencies, blast injuries, Boeck's sarcoid and several infectious diseases of interest in war medicine.

THE ART AND SCIENCE OF NUTRITION. A Textbook on the Theory and Application of Nutrition. By Estelle E. Hawley, Ph.D. and Grace Carden, B.S., The University of Rochester, School of Medicine and Dentistry, Strong Memorial and Rochester Municipal Hospitals, Rochester, N.Y. Ed. 2. Cloth. Pp. 668, with illustrations. Price $3.75. The C. V. Mosby Co., Pine Blvd., Saint Louis 3, Mo., 1944.

The newer knowledge of vitamins, the dietary standards recommended by the Committee on Foods and Nutrition of the National Research Council, and additional adjustments of the normal diet for abnormal conditions are included in this new edition of a handy and attractive textbook, nicely printed, well illustrated, convenient.

LABORATORY METHODS OF THE UNITED STATES ARMY. Edited by James Stevens Simmons, M.D., Ph.D., D.P.H., Sc.D. (Hon.), Brigadier General, United States Army; Chief of the Preventive Medicine Service, Office of The Surgeon General United States Army; Lecturer, Department of Preventive Medicine, Johns Hopkins University Medical School; and Cleon J. Gentzkow, M. D., Ph.D., Colonel, Medical Corps, United States Army; Commanding Officer, Deshon General Hospital, Butler, Pa. Ed. 5. Cloth. Pp. 823, with illustrations. Price $7.50. Lea & Febiger, Washington Square, Philadelphia 6, 1944.

This book was first prepared by officers on duty in the office of the Surgeon General of the Army during the First World War. Three successive editions have appeared since, each enlarged over its predecessor. The fifth, like the first, has been prepared to meet a wartime need for a manual describing practical methods for use in the medical and sanitary laboratories of the Army. It will prove of value not only for this purpose but also for the medical practitioner, the bacteriologist, the hygienist, the sanitarian, and the veterinarian.

(Continued on page 41)

What's New with the Advertisers

RALSTON PURINA COMPANY OFFERS NEW NUTRITION MATERIAL

The Ralston Purina Company is now offering a new eight page folder and a full color, 25" x 38" wall chart to nutrition teachers for class room use.

The large wall chart shows in easily understandable, graphic form — how most diets can be made adequate with the addition of simple, everyday foods. The figures used are taken from a recent study of 5000 representative dietaries made by the Ellen H. Richards Institute of the Pennsylvania State College.

The eight page folder, "Whole Grain Wheat in a Wartime Food Economy," has been prepared especially for distribution by teachers to students in their nutrition classes.

This helpful folder contains a reproduction of the wall chart mentioned above and also a chart of food nutrients, their sources, functions and requirements. It contains, too—several pages of tested, wartime recipes that help to make the most of ration points and money.

For free copies of this helpful material, write Ralston Purina Company, 29 Checkerboard Square, St. Louis 2, Missouri. Quantities are not limited.

NEW TRANSPARENT BACTERIOSTATIC FILM

Allantomide Film, a new protective, pliable, transparent film for minor wounds and burns and dermal lesions of staphylococcal origin, was announced today by The National Drug Company, Philadelphia, manufacturers of biologicals, biochemicals and pharmaceuticals.

A product of the company's Research Laboratories, Allantomide Film contains sulfathiazole sodium (5%), polyvinyl alcohol (5%), allantoin (0.4%) and chlorothymol (0.075%). The bacteriostatic action of sulfathiazole sodium allays further advance of the infection, the allantoin serves as a stimulant to healing. The Film is recommended for covering abrasions, minor surface wounds and slow healing sores. It is being used to treat the staphylococcus infection of impetigo and other infections susceptible to sulfathiazole therapy.

Allantomide Film is applied as a jelly and upon drying produces a tough, pliable; protective film which is transparent. According to the company, immediate need for the conventional bandage is thus obviated; the physician may keep a constant watch on progress without the necessity of frequent redressings. Being water-soluble, the Film may be readily washed off when desired.

Allantomide Film is supplied in 1¼ and 4½-oz. collapsible tubes.

ANOTHER "E" AWARD

The Wilmot Castle Company has been awarded the Army-Navy "E" for achievement in war production according to Wilmot V. Castle, president of the company.

The presentation was made at 4 o'clock on Thursday, June 22. The ceremonies were held in Cutler Union on the University of Rochester Campus.

Extracts

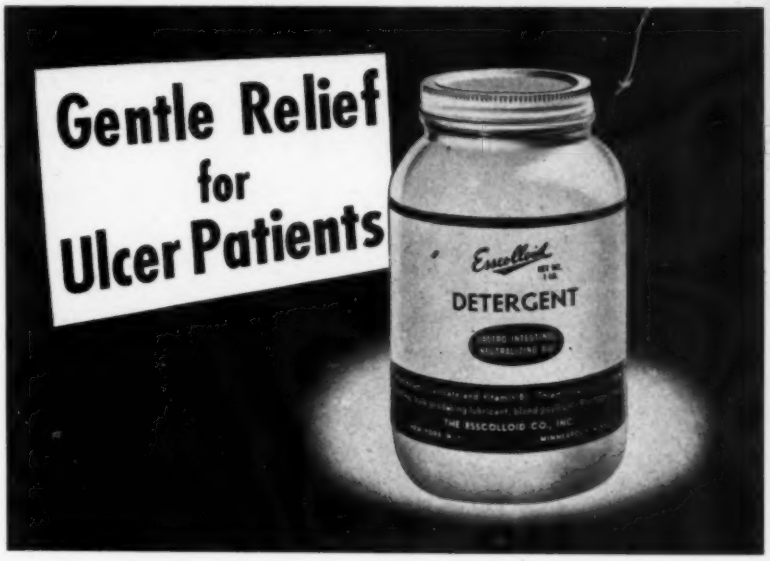
EFFECTS OF THE WAR UPON COLLEGES

A report on the "Effect of the War Upon Colleges, 1943-44" (Circular No. 228) recently was completed by the U. S. Office of Education. The report was made from data obtained from returns to a questionnaire sent to all institutions of higher education last October. The data represents replies from 888, or 52.2 per cent of the 1,702 institutions, and concern the effect of the war upon staffs, student enrollments, degrees conferred, and expenditures. A study of college finances, 1942-43 and 1943-44, from this report was published in *Education for Victory*, February 19, page 31.

Staff.—With reference to staff, the report shows that in 1939-40, the institutions of higher education in the country employed a total of 131,652 teachers. In the fall of 1943 the total number of teachers employed was estimated at 118,125, a decrease of 10.3 per cent. In the year October 15, 1941 to October 15, 1942, the number of teachers decreased 6.7 per cent; and in the year ended October 15, 1943, it decreased 5.5 per cent from the 1942 figure. While, therefore, the number of college teachers in October, 1943, was 10.3 per cent less than in 1939-40, it was 11.2 per cent less than the number in the fall of 1941, just before the entry of the United States into the war.

As regards the composition of the faculty: In 1939-40, there were 94,536 men and 37,018 women, the men thus constituting 71.9 per cent, and the women 28.1 per cent; in 1943, the number of men had dropped to an estimated 80,005, or 67.7 per cent of the 1943 total, and the number of women had increased to an estimated 38,120, or 32.3 per cent of the 1943 total. As the report indicates, since the data for 1943 are for October 15 of that year, the totals may change somewhat before the 1943-44 school year is over.

Between October, 1942, and October, 1943, there were decreases in staff of 7.0 per cent among men and 2.0 among women. The decrease was 3.9 per cent for all full-time teachers and 10.5 per cent for all part-time teachers. Institutions under public control suffered a greater loss in teachers than those under private control, the former losing 6.7 per cent, and the latter 4.2 per cent. The junior colleges lost 10.2 per cent, teachers colleges 7.2 per cent, colleges



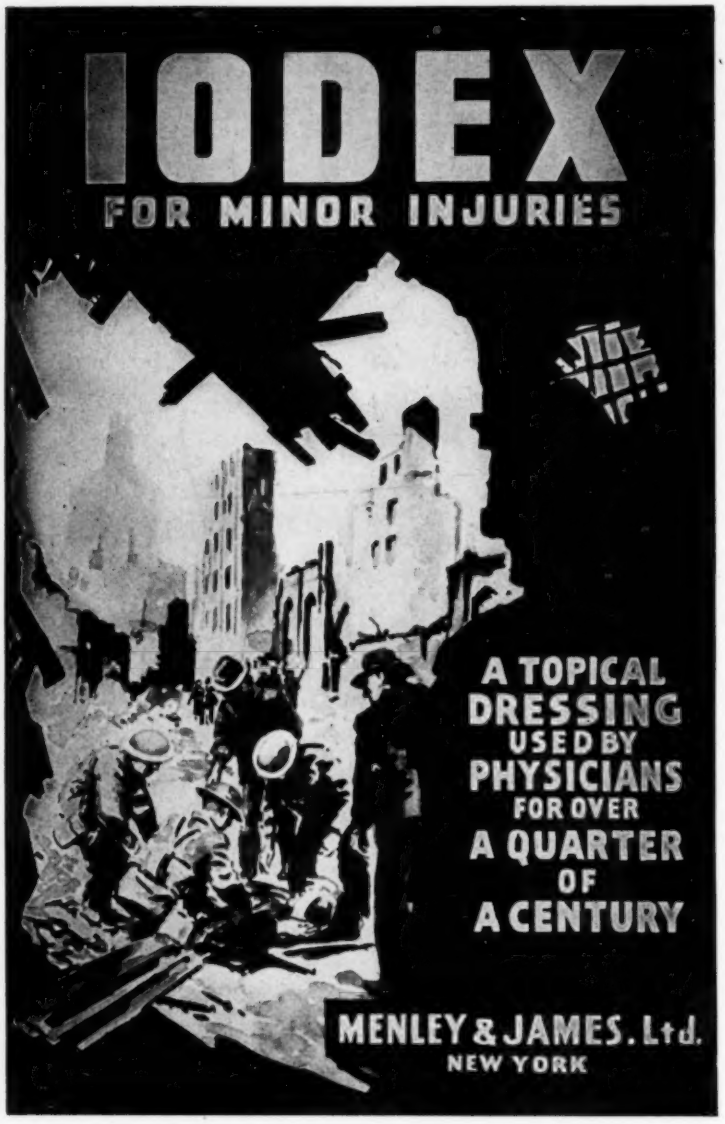
Esscolloid DETERGENT
Helps Neutralize, Soothe, Heal

A mild, soothing neutralizing aid of special value in cases of hyperacidity, peptic ulcer and ulcerative colitis. Its ingredients are long recognized as most effective in treatment of gastric ulceration. These are: the non chemical neutralizing agent, Magnesium Trisilicate; the gentle bulk-producing portion of blond psyllium; and Vitamin B_1 to help assure adequate intake of the one vitamin most often depleted in cases of gastric inflammation. Gives prolonged action, without interfering with digestion. Safe to use; non-habit forming.

THE ESSCOLLOID COMPANY

1626 Harmon Place Minneapolis 3, Minnesota
145 W. 57th Street New York 19, New York

ESSCOLLOID SUPPLEMENT, valuable nutritional aid. Try this dependable vitamin-mineral dietary aid. Helps correct nutritional deficiencies; provides soft, lubricant bulk. Write for clinical reports.



of arts and sciences 4.8 per cent, and normal schools, 1.9 per cent.

In connection with these losses, the report says:

"One of the main causes for the loss of staff members was loss of students. The probable continuance of selective service until the close of the war, the discontinuance of most Army Specialized Training Program units, and the continued demands of war industries and agriculture for manpower, will probably remain indirect causes for losses of college staff members until the close of hostilities. Direct causes for the loss of staff members, such as their entrance into the armed forces, war and related industries, and government, no longer operate with quite the force felt earlier in the war period."

New Staff Members.—The turnover among college teachers was greater during the year ended October 15, 1943, than in the preceding year. The number of college teachers new to their positions in October, 1942, was estimated at 11,000 full-time and 5,500 part-time teachers. In October, 1943, the number of new full-time teachers was estimated at 13,320, and the number of part-time teachers at 5,430. In 1942 the new total full-time teachers constituted 12.2 per cent of the total full-time faculty members and the number of new part-time teachers 18.0 per cent of the total part-time faculty members. In 1943 the new full-time teachers constituted 14.6 per cent of the total and part-time teachers 20.0 per cent of the total.

Unfilled Positions.—From the reports of 684 institutions, it was estimated that for the entire country, 12,500 members of college teaching staffs, two-thirds of them men and one-third women, left their positions between the May-June commencements of 1943 and October 15 of that year. At least 13 fields of instruction were thus affected. In most of these fields the number of losses was above 500. Of the number of members of instructional staffs who left vacancies unfilled by October 15, 1943, men constituted 22.4 per cent and women 18.3 per cent. Chemistry had 797 vacancies; physics, 661; physical education for men, 635; biology, 633; medicine, 620; economics, 598; mathematics, 587; home economics, 579; and engineering, 523. Home economics was the only field in which there was not a large percentage of vacancies still existing by October 15. Only 41, or 7.1 per cent of the 579 vacancies in this field remained unfilled at that time. In physics, 51.7 per cent were still unfilled; in engineering, 44.4 per cent; in mathematics, 39.2 per cent; in agriculture, 38.9 per cent; in medicine, 34.5 per cent; and in physical education for men 30.9 per cent.

Student Enrollments. — Recovering from the temporary setback caused by the economic depression, college enrollments had by 1939-40 resumed their upward trend of previous years and in that year reached a total of 1,493,203 students. Of this number, 1,360.493 were civilian and 4,322 were military students. By the fall of 1943, however, college enrollments had dropped to an estimated 1,120,300, or 17.9 per cent less than the enrollment for the fall of 1939. Of the 1,120,300 students, civilians comprised only 761,630, a number smaller by 598,863, or 44.0 per cent, than the enrollment at the outbreak of the war in Europe in 1939. Men represented 556,737 of the total loss, and women 42,126.

Analysis of the loss in civilian students indicates that during the past four years college and universities and professional schools have lost 41.6 per cent of their civilian enrollments; teachers colleges, 53.0 per cent; normal schools, 60.8 per cent; and junior colleges, 52.1 per cent. Publicly controlled institutions have lost 51.3 per cent, privately controlled, 35.7 per cent.

The estimated total enrollment of 1,120,300 in the fall of 1943 represents a decrease of 7.3 per cent from the 1,209,150 figures reported for the fall of 1942. Unpublished data assembled in the Office of Education indicates that the loss in civilian enrollments for all institutions of higher education from October, 1942, to October, 1943, was 34.4 per cent.

The 761,630 civilian students in residence on October 15, 1943, included 255,440 men and 506,190 women, a ratio of approximately 1 to 2, which contrasts sharply with the 1939-40 enrollment, in which the ratio was 3 to 2.

Graduate students constituted but 32,063 of the 761,630 civilian student enrollment on October 15, 1943; whereas just before the start of the war there

were around 100,000 students enrolled in graduate study. The number now enrolled is 4.2 per cent of the total student body, while in 1939-40 it was approximately 7.0 per cent.

Among the 761,630 civilian students are 68,645 men and 174,104 women in the junior, senior, and graduate groups. These 242,749 students include 14,687 in engineering, 11,359 in biology, 13,127 in chemistry, 22,723 in home economics, and 14,064 in commerce and business. The other 166,784 are in fields enrolling fewer than 10,000 students each.

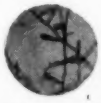
Students First Time in College.—Estimates based on returns from 749 institutions show that the number of civilian students who were in college for the first time on October 15, 1943, was 215,585, of whom 60,645 were men and 154,940 women. Of this number, universities, colleges, and professional schools enrolled a total of 152,735, with 46,060 men and 106,675 women; teachers colleges, 19,540, with 3,100 men and 16,440 women; normal schools, 1,470, with 250 men and 1,220 women.

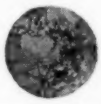
Publicly controlled institutions enrolled a total of 97,365 civilian students in college for the first time. Of these 28,545 were men and 68,820 were women. Privately controlled institutions enrolled a total of 118,220 civilian students, of whom 32,100 were men and 86,120 were women.

Summer-Session Enrollments.—The estimated 1943 enrollment of civilian students in summer sessions declined from that of 1942 by 15.9 per cent. The decrease among men was 34.8 per cent while among women it was only 1.8 per cent. However, the number of students enrolled in summer sessions for the first time in 1943 showed an opposite trend, with a total increase of 11.6 per cent, of whom 3.6 per cent were men, and 20.2 per cent women. Enrollments in publicly controlled institutions decreased more than in privately controlled institutions.

Degrees Conferred.—The estimated number of degrees conferred by universities, colleges, and professional schools during the 12-month period, July, 1942, to June, 1943, was 207,021, a decrease of 9,500 from the total 216,521 of 1939-40. This decrease was almost entirely within the master's degree group, in which only 17,827 degrees were conferred in 1942-43, as contrasted with 26,731 in 1939-40. The number of bachelor's degrees decreased by only 760. In 1939-40, there were 186,500 awards; in 1942-43, 185,740. An increase of 16,796 in the number of bachelor's degrees conferred on women was offset by a decrease of 17,556 in the number conferred on men. On the other hand, an increase in the number of doctor's degrees was due to the larger number of men receiving the degree. In 1939-40, the degree was conferred upon 2,861 men; in 1942-43, on 3,025. The number of women upon whom the doctor's degree was conferred in 1942-43 was 429, the same as the number in 1939-40.—*Education for Victory*, May 20, 1944.

MONILIA albicans


EPIDERMOPHYTON inguinale


MICROSPORUM audouini

TRICHOPHYTON purpureum

. . . As demonstrated by clinical investigation in a leading United States hospital

In tests on a large number of hospital patients, Sopronol was found to exert an *inhibitory* rather than a destructive action on the fungus. The advantages of this method are obvious. Sopronol, taken readily into the fungous organism, prevents its development and spread. Hence the infection is quickly brought to an end, but without the customary skin irritation caused by poisonous by-products resulting from strong fungicides in contact with the mold. The chemical basis of Sopronol is sodium propionate.

ALL SUPERFICIAL MYCOSES (RINGWORM)

Prescribe Sopronol for: Tinea Pedis, Tinea Cruris, Tinea Capitis, Tinea Glabrosa, due to "the dermatophytes"—Trichophyton, Epidermophyton, Microsporum, Monilia (Candida) and pathogenic aspergillae infections. Sopronol is non-irritating, non-keratolytic, non-toxic.

Available in alcoholic solution, powder and water soluble ointment bases

MYCOLOID LABORATORIES, INC., Little Falls, New Jersey J-2

Please send me descriptive literature and reprints as checked:

☐ *"Sodium Propionate in the Treatment of Superficial Fungous Infections"*

☐ *"The Fungistatic and Fungicidal Effect of Sodium Propionate on Common Pathogens"*

_____ M.D.

Please Print

Street _____ City _____ State _____

ADDITIONAL EXHIBITORS

Not listed in June Journal

	Space No.
Austenal Laboratories, Inc.	137
Colwell Publishing Co.	136
DePuy Mfg. Co.	31
McCaskey Register Co.	25
Nettleship Company	138
Lydia O'Leary	143
Petrolagar Laboratories	58
S. M. A. Corporation	57
Weber Dental Mfg. Co.	144 & 145

CHANGES OF ADDRESS AND LOCATION

Adams, Ivor K., from 1188 S. High St., to 1200 S. High St., Columbus 6, Ohio.

Adams, Kenneth, from Philadelphia, Pa., to 260 Laurel St., Hartford, Conn.

Aiken, Joseph G., from 4553 California Ave., to 4800 California Ave., Seattle 6, Wash.

Alexander, George A., from 320 Brett Bldg., to 325 Brett Bldg., Mankato, Minn.

Alexander, Ted, from Lubbock, Texas, to Archer Hospital, Archer City, Texas.

Alspach, William, from Webster Groves, Mo., to 3804 W. Pine Blvd., St. Louis 8, Mo.

Amsden, Edwin E., from Excelsior Springs, Mo., to Holt, Mo.

Amsden, Lois Helmer, from Excelsior Springs, Mo., to Holt, Mo.

Anderson, Eugene W., from 14 S. LaGrange Road, to 200 S. LaGrange Road, LaGrange, Ill.

Anné, Frederick, from Cleveland, Ohio, to 5035 Schuyler St., Philadelphia 44, Pa.

Appleyard, F. Douglas, from New York, N. Y., to Natl. Bank Bldg., La Grange, Ill.

Atkins, Chas. E., from 880 E. Colorado St., to 106 S. El Molino St., Pasadena 5, Calif.

Bahme, Basil B., from Dickinson, N. Dak., to 803 Roshek Bldg., Dubuque, Iowa.

What therapeutic aims in hemorrhoids?

❶ Anesthesia of the exposed nerves.
❷ Hemostasis of the bleeding veins.
❸ Decongestion of the varicosities.

Physicians meet these indications with RECTAL MEDICONE, plus regulation of the patient's habits to secure subsidence and quiescence of the process.

RECTAL MEDICONE contains 5% Anesthesin to effect prompt relief from pain. It is fortified with Ephedrine Hydrochloride to stop the bleeding and modern anti-hemorrhoidal agents required to secure retrogression and resolution.

The wide and constantly growing employment of RECTAL MEDICONE attests most eloquently to the foremost place which it has attained in its field.

MEDICONE COMPANY
226 VARICK STREET, NEW YORK

STOPS HEMORRHOIDAL PAIN WITHIN 5 MINUTES

RECTAL MEDICONE

Bahnson, Bahne K., Ph. M. 2/c, from Great Lakes, Ill., to U.S. Naval Hospital Staff, Camp Wallace, Texas (In Service).

Baird, Nora B. Pherigo, from 2014 Highland Ave., to 407 Lancing Ave., Louisville, Ky.

Baker, P. O., from Hubbard Bldg., to Telephone Bldg., Centralia, Mo.

Barden, George A., from Los Angeles, Calif., to 643 E. Olisal St., Salinas, Calif.

Barker, Joseph G., from Kansas City, Mo., to 103 Carpenter, Huntsville, Mo.

Beardslee, Hugh, from Lansing, Mich., to Dimondale, Mich.

Benefield, H. M., from Kansas City, Mo., to Box 589, Stillwater, Okla.

Berlier, Lawrence W., Capt., from Camp Callan, Calif., to Hq. & Hq. Bty. A.A.R.T.C., Fort Bliss, Texas (In Service).

Bernhard, A. H., from 512 to 414-18 Methodist Publ. Bldg., Richmond 19, Va.

Biggers, E. R., from Thomaston, Maine, to 2 Maple St., Lisbon Falls, Maine.

Bishop, J. C., from Rock Rapids, Iowa, to 1103 S. Minnesota Ave., Sioux Falls, S. Dak.

Blasdel, H. George, from 325 W. Jefferson St., to 736 S. Flower St., Los Angeles 14, Calif.

Blinn, Joseph E., from Fordland, Mo., to Republic, Mo. (In Service).

Boothby, R. M., from Smith St., to Main & Oxford Sts., Fryeburg, Maine.

Boulware, M. T., from 306½ Main St., to 410 W. First St., McCook, Nebr.

Brooker, G. E., from 203 Market St., to 3319 Tuscarawas St. W., Canton 3, Ohio.

Bryan, George E., from Hinton, Okla., to Comanche Hospital Clinic, Comanche, Okla.

Calvird, J. P., from Faith, S. Dak., to Co. 508-44, Camp Bennion, Farragut, Idaho (In Service).

Carney, William J., from Fort Meade, Md., to APO 9639, c/o Postmaster, New York, N. Y. (In Service).

Clark, Ivan L., from 405 S. Main St., to 202 E. Broadway, Kingfisher, Okla.

Claus, Anton H., Ph. M. 1/c, from Malaria Control Unit, to 119 Constr. Bn. c/o Fleet Postoffice, San Francisco, Calif. (In Service).

Crews, Theron D., from Booth Bldg., to Crews Hospital & Clinic, Gonzales, Texas.

Cross, Robert B., from Still-Hildreth Sanitorium, to Box 128, Macon, Mo.

Davis, Harry L., from 406 to 410 Baker Bldg., Walla Walla, Wash.

Dixon, Charles C., from 511½ Main St., to Box 111, Newton, Kans.

Donovan, H. E., from El Portal Hotel, to Donovan Hospital, Raton, N. Mex.

Douglass, Everett N., from Bellevue, Mich., to Standish, Mich.

Dunbar, Willo V., from Kansas City, Mo., to Gauley Bridge, W. Va.

Dunlap, Emmett E., from Box 24, to Box 217, San Diego, Texas.

Eisenberg, Lester, Lt., from APO 922, to APO 322, c/o Postmaster, San Francisco, Calif. (In Service).

Emerick, Harriette L., from Waynesfield, Ohio, to 109 E. Nine Mile Road, Ferndale 20, Mich.

Emmerson, Earline C., from Chicago, Ill., to Decker Hospital, Goshen, Ind.

Eyerick, Carl, from Culver City, Calif., to 466 E. Ohio Ave., Burbank, Calif.

The acute conjunctivitis and nasal catarrh
which usually accompany HAY FEVER
are relieved by the use of ALKALOL

As an Eye Treatment and Nasal Douche

COMFORTING——SINCE 1896——EFFECTIVE

(Sample on Request)

THE ALKALOL COMPANY TAUNTON, MASS.

Farnham, Gerald M., from Akron, Ohio, to Box 56, Manchester, Mich.

Fehling, Hans, from Los Angeles, Calif., to Box 245, Palos Verdes, Calif.

French, Carl C., from Ida, Mich., to 43 LaFayette S. E., Grand Rapids 8, Mich.

Frost, Jack, from Los Angeles, Calif., to 631 S. Willard Ave., San Gabriel, Calif.

Fuller, A. H., from Bridgeport, Mich., to Muskegon Osteopathic Hospital, Third & Webster, Muskegon, Mich.

Gafford, Nathaniel B., from Corpus Christi, Texas, to De Kalb, Texas.

Gardner, David A., from University City, Mo., to Box 304, Santa Anna, Texas (Released from Service).

Garfield, H. F., from 4 N. Vermilion, to 1000 N. Vermilion St., Danville, Ill.

Garnett, Martha, from 35 Weissinger-Gaulbert Bldg., to 417 Fincastle Bldg., Louisville 2, Ky.

Gedney, Dewaine L., from Wayne, Pa., to 180 Broadway, Bangor, Maine.

Goldberger, M. B., from 515 N. Michigan Ave., to 2730 S. Washington, Saginaw, Mich.

Grasse, Joseph D., from Pasadena, Calif., to Waldo General Hospital, 15th Ave., N.E., & 85th St., Seattle 5, Wash.

Green, B. W., from Eagle Butte, S. Dak., to 1225 Lake Drive S. E., Grand Rapids 6, Mich.

Green, Philip, R., A/S, from Arcola, Ill., to Co. 1066, U.S.N. Training Center, Great Lakes, Ill. (In Service).

Grua, Otto T., from 6630 Sunset Blvd., to 6381 Hollywood Blvd., Hollywood 28, Calif.

Gutensohn, Max T., from Mott, N. Dak., to Box 305, Kirksville, Mo.

Gutensohn, Olwen R., from Mott, N. Dak., to Box 305, Kirksville, Mo.

Hall, Richard W., from Kansas City, Mo., to Box 32, Fort Cobb, Okla.

Harvey, Roy J., from 222 S.F. St., to 221 S. Court Ave., Gaylord, Mich.

Hasse, Alfred C., from Los Angeles, Calif., to 6331 Hollywood Blvd., Hollywood 28, Calif.

Hayes, Clarence G., from 117 North St., to 132½ Court St., Washington Court House, Ohio.

Higgs, Robert D., from 4800 Walnut St., to 2618 W. Somerset St., Philadelphia 32, Pa.

Holt, James L., from 5800 Overhill Drive, to 5911 Avalon Blvd., Los Angeles 3, Calif.

Hudson, W. Guy, from Hudson Clinical Hospital, to Box 305, Fairfax, Okla.

Jackson, A. Verne, from Route 1, Box 96, to 331 S. Olive St., Anaheim, Calif.

Jacoby, W. D., Lt., from Atlantic City, N. J., to Holabird Sig. Depot, Baltimore 19, Md. (In Service).

Jannelli, Anthony S., from 1628 S. Tenth St., to 1316 S. Broad St., Philadelphia 48, Pa.

Jaxheimer, William W., from 11 Ingram St., to 106-21 Continental Ave., Forest Hills, L.I., N. Y.

Jenkins, Bowen D., from 318 to 812 Security Bldg., Long Beach 2, Calif.

Jenkins, Rachel E., from 318 to 812 Security Bldg., Long Beach 2, Calif.

USE LAVORIS

The Choice of the Well Groomed

You are using the best when you use Lavoris

REDUCING THE RISK

Postoperatively in Thyroid Surgery

Most surgeons consider the administration of iodine following thyroidectomy just as essential as preoperative therapy. Yet not infrequently such iodine administration must be discontinued because of adverse reactions. Thus the threat of crisis becomes more imminent, and the patient's condition more critical.

Amend's Solution prevents these risks. Tolerated even by patients known to react to Lugol's solution, it permits administration of full dosage both pre- and postoperatively, tiding the patient over the more critical days. Postoperatively Amend's Solution may be given as long as deemed necessary, without fear of reaction.

The low toxicity of Amend's Solution is due to its iodine (1.21%) which is contained largely in organic linkage with a protein. Amend's Solution is a stable, aqueous preparation, free from alcohol, glycerin, or potassium iodide.

Thos. Leeming & Co. Inc.

155 East 44th Street, New York 17, N. Y.

Amend's SOLUTION

Johnson, Paul E., Ens., from Great Lakes, Ill., to Camp Bradford, Norfolk, Va. (In Service).

Johnson, George A., from Carson City, Nev., to 207-8-9 Wonder Bldg., Reno, Nev.

Jolly, Benjamin S., from 201 W. Reed St., to 203½ N. Clark St., Moberly, Mo.

Jones, Arnold M., from Tulsa Osteopathic Hospital, to 307 Palace Bldg., Tulsa 3, Okla.

Jones, James E., Pvt., from Sarasota, Fla., to Co. B, 82 Med. Bn. Armored, APO 262, c/o Postmaster, Camp Barkeley, Texas (In Service).

Kaelber, Charles R., from Philadelphia, Pa., to Detroit Osteopathic Hospital, 188 Highland Ave., Highland Park 3, Mich.

Kaggen, Elias, from 512 Ninth St., to 917 Eighth Ave., Brooklyn 15, N. Y.

Karlton, George C., from Kansas City, Mo., to 306-307 Coachman Bldg., Clearwater, Fla.

Kechijian, Keaim M., from Providence, R. I., to 84 Broad St., Pawtucket, R. I.

Kerr, Janet M., from Villard, Minn., to 6 Oriole Gardens, Toronto, Ont., Canada.

Kerton, John A., from 1922 N. Oxford Ave., to 921 Westwood Blvd., Westwood Village, Los Angeles 24, Calif.

Kimball, Stanley W., CCO '43; Massachusetts Osteopathic Hospital, 43 Evergreen St., Boston 30, Mass.

Klump, Elmer J., from Albuquerque, N. Mex., to Fort Sumner, N. Mex.

Knapp, Robert M., from 1827 Wichita St., to 3813 Fonnin, Houston 4, Texas.

Kester, C. D., from 518 Walnut St., to 343 Martin St., Greenville, Ohio.

Lennon, Clifford J., from Graham Bldg., to 219 N. Cook St., Portage, Wis.

Lewis, George P., from 1620 18th St., to 1020 Seaboard Bldg., 4th & Pike, Seattle 1, Wash.

Lindstrom, Sadie Banks, from Belvidere, Ill., to 1525 Daisy Ave., Rockford, Ill.

Manwell, Thomas A., from 361 River St., to Manistee County Savings Bank Bldg., Manistee, Mich.

Mantle, A. E., from 138 E. Main St., to 134½ E. Main St., Dwight, Ill.

Matz, Hazel D., from Kansas City, Mo., to Ash Grove, Mo.

Matz, Homer D., from Kansas City, Mo., to Ash Grove, Mo.

Mauthe, Milton R., from Waldo General Hospital, to 1020 Seaboard Bldg., Seattle 1, Wash.

McAtee, Wayne A., from 5½ Hopka Bldg., to 122 S. Seventh St., Klamath Falls, Ore.

McBride, Bertram M., Pfc., from Bethlehem, Pa., to MacDill Field, Tampa 8, Fla.

McHenry, John J., from 643 S. 52nd St., to 5201 Pine St., Philadelphia 43, Pa.

McKee, John R., from Belton, Mo., to U.S. Navy, Farragut, Idaho (In Service).

McLaughlin, Robert J., Lt., from Kearny, Nebr., to APO 464, c/o Postmaster, New York, N. Y. (In Service).

McMurry, William D., from Kansas City, Mo., to Kidder, Mo.

McOmber, Laurence E., from Box 344 to 126 Washington St., Grand Haven, Mich.

Merrill, J. Osborn, Ph. M. 2/c, from Willshire, Ohio, to U.S.N. Hospital Staff, Great Lakes, Ill. (In Service).

Merrill, William E., from 3203 to 3107 W. McGraw St., Seattle 99, Wash.

Merritt, John P., from 238 Aquilla Court Bldg., to 414 City Natl. Bank Bldg., Omaha 2, Nebr.

Midgen, William, from Kansas City, Mo., to Farmers Bank Bldg., Keytesville, Mo.

Moore, J. M. Jr., from Brownsville St., to Hotel Everett, Trenton, Tenn.

Moore, Marion O., from 116½ to 130 E. Philadelphia St., Whittier, Calif.

Mountjoy, M. Gerry, from Los Angeles, Calif., to 6505 Atlantic Blvd., Bell, Calif.

Mullin, H. L., from Jenks, Okla., to 203 Clayton Blvd., Sapulpa, Okla.

Murphy, J. Vincent, from Dixie Highway to Gundry Bldg., Grand Blanc, Mich.

Nelson, Clifford W., from 614 Capitol Ave., N.E., to 1507 Central Tower, Battle Creek 5, Mich.

Neushutz, Edward W., from Los Angeles, Calif., to 409 E. Hadley St., Whittier, Calif.

Newall, John R., from Honey Brook, Pa., to 619 Main St., Bethlehem, Pa.

Nordstrom, C. Edward, from 201 Wehrman Ave., to 223 Frankford Road, Louisiana, Mo.

Norton, Charles R., from Livermore Falls, Maine, to Church St., Norwich, Vt. (In Service)

Noyes, Alston W., from Clayton, Mo., to 33 N. Meramec Ave., St. Louis 5, Mo.

Newan, Verdelle A., from 8430 Grand River Ave., to 8544 Grand River Ave., Detroit 4, Mich.

Nichols, W. L., from Brown Bldg., to 111 N.E. St., Exeter, Calif.

Oddo, Nicholas V., from East Norwalk, Conn., to 1624 Parade St., Long Beach 6, Calif.

Odell, C. W., from 426 to 301-05 Odd Fellows Bldg., to South Bend 8, Ind.

Owen, Paul R., Ph. M. 2/c, from U.S. Naval Hospital Staff, to U.S.N. Trng. Center, Farragut, Idaho (In Service).

Owen, R. M., from 1415 S. Third St., to 210 Medical Dental Bldg., Mount Vernon, Wash.

Pettapiece, Henry J., from Camden, Maine, to Conley Clinical Hospital, 619 Garfield Ave., Kansas City 1, Mo.

Phillips, Donald I., from Brooklyn, N. Y., to Maybrook, N. Y.

Prior, Joseph E., from Kansas City 4, Mo., to Box 447, Chillicothe, Mo.

Purcell, Coy L., Cpl., from Fort Riley, Kans., to APO 259, Camp Polk, La. (In Service).

Quimby, Ida E., from 183 Williams St., to 30 Broad, New London, Conn.

Ranny, Done E., from Highland Park, Mich., to Art Centre Hospital, 5435 Woodward Ave., Detroit 2, Mich.

Reder, R. R., from 4554 Broadway, to 924 Sunnyside Ave., Chicago 40, Ill.

Rieger, Paul, from 352 Cottage Road, to 97 Ocean St., South Portland, Maine.

Ringland, George W., from Mexico, Mo., to Steel, Mo.

Rosen, Samuel, from Hayes Center, Nebr., to Arapahoe, Nebr.

Rouse, H. Seaman, from 216 Richardson St., to Roswell Osteopathic Hospital & Clinic, 401 N. Lea Ave., Roswell, N. Mex.

Runions, M. R., from Correctionville, Iowa, to Badgerow Bldg., Sioux City, Iowa.

Sanchez, Leo B., from Mexico, Mo., to Davenport Hotel, Davenport, Iowa.

Schaeffer, E. M., from 223 Capital Ave., N.E., to 408 Post Bldg., Battle Creek, Mich.

Schaekel, Edward A., Capt., from APO 465, to APO 192, c/o Postmaster, New York, N. Y.

Schildberg, A. O., from Gould City, Mich., to 500 N. Main St., Three Rivers, Mich.

Schmook, R. J., from Elmhurst, Ill., to 309 Albion St., Edgerton, Wis. (In Service)

Seablom, Maxine, from St. Louis, Mo., to The Arthritis Sanatorium & Diagnostic Clinic, Ottawa, Ill.

Semon, Ambrose T., from 4202 to 4156 Piedmont Ave., Oakland 11, Calif.

Siehl, Paul W., KCOS '44, 3003 Montana Ave., Cincinnati 11, Ohio.

Simpson, D. H., from East Vaughn, N. Mex., to Box 246, Fort Sumner Hospital, Fort Sumner, N. Mex.

Sinnett, John J. Jr., from Bangor Osteopathic Hospital, to 79 Pine St., Bangor, Maine.

(Continued on page 43)

APPLICATIONS FOR MEMBERSHIP

California

Swift, Louise Ferris, (Renewal) Burbank Hosp., 466 Olive, Burbank

Comer, Grace E. P., 293 Thalia St., Laguna Beach

Sturges, Frederick W., Time Bldg., 215 American Ave., Long Beach 2

Leean, Emlin O., (Renewal) 2223 Honolulu Ave., Montrose

Longyear, Clyde S., (Renewal) 823 Foreman Bldg., Los Angeles 14

Robison, J. Holt, (Renewal) 707 S. Hill St., Los Angeles 14

Fowler, Frederick C. H., (Renewal) 104 El Tejon Ave., Oildale

Colorado

Molden, Ronald S., (Renewal) 1560 Lincoln, Denver 5

Florida

Gettinger, D. R., (Renewal) Box 21, Arcadia

Karlton, George C., (Renewal) 306-07 Coachman Bldg., Clearwater

Beckwith, Robert L., (Renewal) 42 S. Peninsula Dr, Daytona Beach

De Shaw, Roy Gilbert, (Renewal) 218 W. New York Ave., De Land

Lovejoy, Evelyn Purtzer, (Renewal) 23 Main St., Rooms 21-24, Jacksonville 2

Routzahn, B. M., (Renewal) Polk Theater Bldg., Lakeland

Nichols, James H., (Renewal) Largo

Wilson, Paul E., (Renewal) 202 Robertson Bldg., Ocala

Johnston, R. L., (Renewal) 29 S. Ridgewood Dr., Sebring

Day, Guilbert E., (Renewal) 901 Tampa Theatre Bldg., Tampa

Watters, D. A., (Renewal) 2065—15th Ave., Vero Beach

Illinois

Graham, Arnold A., 2636 E. 75th St., Chicago 49

Poucher, H. B., (Renewal) 1-2 Hubbard Bldg., Elgin

Johnson, Hilda E. C., (Renewal) 212 S. Marion St., Oak Park

Indiana

Porter, Eldon B., (Renewal) 512 J. M. S. Bldg., South Bend 5

Iowa

Burke, Gladys Worth, (Renewal) 317 Park Bldg., Council Bluffs

Kansas

Owen, Bettie L., (Renewal) 225 W. Park, Olathe

Johnson, Harry, (Renewal), Waverly

Maine

Rhames, Albert T., Goodwins Mills

Rice, Verne L., (Renewal) 27 Main St., Belfast

Yukl, Francis J., (Renewal) 2 Wentworth St., Kittery

Michigan

Pryor, R. A., 130 E. Glenguile St., Parchment.

Missouri

Shuman, John, Clarkton

Heptonstall, A. E., (Renewal) 3210 E. 27th St., Kansas City 1

Shannon, F. W., (Renewal) 202 W. Lockwood Ave., Webster Groves

New Jersey

Waddell, Ruth V., (Renewal) 537 Kinderkamack Rd., Oradell

New York

Newman, Arthur H., (Renewal) 48-36 92nd St., Elmhurst

New Mexico

Catren, Charles, (Renewal) Medical Arts Bldg., Gallup

North Dakota

Stevens, F. G., Bangs Bldg., Devils Lake

Oregon

Stryker, William, 704 Fourth Ave., McMinnville

Control Summer Diarrhea
WITHOUT CONSTIPATING EFFECT
with...
Zymenol
DOSAGE:
At Onset: Teaspoonful every hour until normal evacuation with proper stool consistency is restored.
Follow with: Teaspoonful before meals and at bedtime, reduce as indicated.
Zymenol provides a twofold natural approach to the two basic problems of Common Diarrhea;
NORMAL INTESTINAL CONTENT REESTABLISHED
. . . through BREWERS YEAST ENZYMATIC ACTION*
NORMAL INTESTINAL MOTILITY RESTORED
. . . with COMPLETE NATURAL VITAMIN B COMPLEX*
This twofold natural therapy assures normal bowel function without constipating astringents and absorptives, artificial bulkage or catharsis.
Write For FREE Clinical Size
*ZymenoL contains Pure Aqueous Brewers Yeast (no live cells)
OTIS E. GLIDDEN & CO INC. EVANSTON ILLINOIS

AOA-7-44

Pennsylvania

Walsh, John Craig, (Renewal) 3618 Fisk Ave., Philadelphia 29

Copp, Olive L., 6910 Market St., Upper Darby

South Dakota

Clifford, L. R., Alcester

Tennessee

Phillips, Leonard J., 1111 Hamilton National Bank Bldg., Chattanooga 2

Schwartz, Herman Paul, (Renewal) 905 S. Garden St., Columbia

Texas

Zachary, Floyd William, (Renewal) 501-4 Myrick Bldg., Lubbock

Washington

Herren, Thomas C., (Renewal) Columbia Hotel Bldg., Kelso

Kaylor, J. Wesley, (Renewal) 319 E. Yakima Ave., Yakima

KIRKSVILLE COLLEGE OF OSTEOPATHY & SURGERY

April, 1944, Graduates

Bubeck, Roy G., Jr.
Goff, Walter Bohman
Luka, Leo D.
Small, Earl G.
Sweeney, Raymond E.
Woodmansee, James R.
Young, Don W.
Zauder, Gerard

KANSAS CITY COLLEGE OF OSTEOPATHY & SURGERY

April, 1944, Graduates

Kritzler, James H.
Machovec, Louis J.

Keep Up Your Contacts

While Away from Your Office with

OSTEOPATHIC MAGAZINE

You can leave your cares behind with confidence that your patients are being kept in contact with osteopathy

Send copies to your new, your regular, your old, and your prospective patients, as well as friends of osteopathy.

Don't neglect your legislators, officials, politicians, and labor leaders whom you wish to keep informed. Remember elections are coming this fall, you want to keep public opinion in the right channels

Order Today to Insure Delivery

Our Supply of June *Osteopathic Magazine* Was Exhausted Before the Month Was Half Over

In the August Issue

- *Osteopathy—The Science of Medicine*
- *Manipulation Basic in Osteopathy*
- *Twin Business Booms*
- *Summertime is Hiking Time*
- *The Infant in Hot Weather*
- *Summer Malady*
- *Swimming—The All-Age Sport*
- *A Country Club for Service Men*

Order Blank for Your Convenience on Page 44

AMERICAN OSTEOPATHIC ASSOCIATION
540 N. Michigan Ave. **Chicago**

REQUIRES ANALGESIA - BACTERIOSTASIS, AND DEHYDRATION OF THE TISSUES.

EFFECTIVE THERAPY IN *Otitis Media*

Auralgan

THE DOHO CHEMICAL CORPORATION

NEW YORK - MONTREAL - LONDON

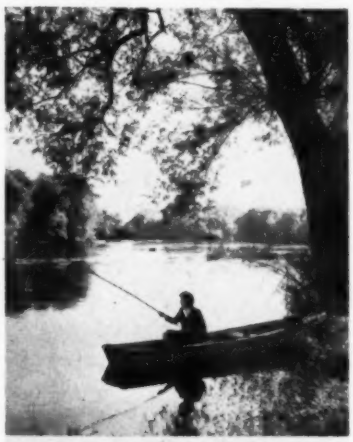
BOOK NOTICES

(Continued from page 32)

MANUAL OF THE DISEASES OF THE EYE; for students and general practitioners. By Charles H. May, M.D., Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York; Formerly Chief of Clinic and Instructor in Ophthalmology, Medical Department of Columbia University, and Director of the Eye Service at Bellevue Hospital, New York. Ed. 18, revised. Cloth. Pp. 520, with illustrations. Price $4.00. William Wood & Co., Mt. Royal and Guilford Aves., Baltimore, 1943.

Perhaps little need be said except that this old established standby, which has gone into eight editions in Britain, ten in Spanish, six each in French, Italian and Dutch, two in German, two in Japanese, three in Chinese, two in Portuguese, and one in an Indian language, has now gone into its eighteenth edition in this country, and the eighteenth probably will have the same experience as practically all of the others, that there will be from one to two or three reprintings before the nineteenth comes from the press at a not very distant date.

(Continued on page 42)



OSTEOPATHIC MAGAZINE

COVER OF AUGUST O. M.
See Opposite Page

On the Job—OUR FEMININE "MANPOWER"
OFFICIALS of the War Manpower Commission assert that women today can capably "take over" any man's job, provided it is within their physical powers.
Menstrual aberrations, however, cause frequent absenteeism and loss of efficiency. For the symptomatic treatment of functional conditions, physicians find Ergoapiol (Smith) a highly efficient emmenagogue, in which the action of all the alkaloids of ergot (prepared by hydro-alcoholic extraction) is synergistically enhanced by the presence of apiol, oil of savin, and aloin.
Its sustained tonic action on the uterus provides welcome relief in many cases—by helping to induce local hyperemia and to stimulate smooth, rhythmic uterine contractions, and by serving as a potent hemostatic agent to control excessive bleeding.
May we send you a copy of the booklet "The Symptomatic Treatment of Menstrual Irregularities."
MARTIN H. SMITH CO.
150 LAFAYETTE STREET
NEW YORK, N. Y.
INDICATIONS
Amenorrhea, dysmenorrhea, menorrhagia, metrorrhagia, in obstetrics.
Dosage: 1-2 cap. 2-4 times daily.
Supplied: In ethical packages of 20 cap.
ERGOAPIOL
THE PREFERRED UTERINE TONIC
Ethical protective mark, M. H. S., visible only when capsule is cut in half at seam.
MHS

PEPTIC ULCER PATIENTS

avoid between meal feedings when

treated with CA-MA-SIL

PROLONGED acid neutralization is important as it obviates the necessity of between-meal feedings and insures the comfort of the patient, especially during the night.

CA-MA-SIL will neutralize 38 times its volume of N/10 HCl over a period of 3 hours. Quick relief from pain. Contains NO SODA. Does not induce ANOREXIA.

DOSAGE: Start the patient with 2 level teaspoonfuls in one-half glass of water (preferably warm or hot), before *and* after each meal and at bedtime. If necessary, between-meal dose may be prescribed.

SEND FOR SAMPLE

Livingston Chemical Co., 1139 Munsey Bldg. Baltimore 2, Md.

HELP IN PLANNING **ALLERGY DIETS**

Wheat Free—Egg Free—Milk Free

Many tasty foods can be substituted for those that are prohibited. For lists of foods allowed, foods prescribed, and many flavorsome recipes, send for the new "C-D" Allergy Booklet—a valuable help for physician and patient.

C-D ALLERGY FOODS

FREE BOOKLET

Send "C-D" Allergy Booklet showing lists and recipes.

Dr.....
Address.....
City.....
State.....

CHICAGO DIETETIC SUPPLY HOUSE, INC. 1750 W. VAN BUREN ST., CHICAGO 12, ILL.

MICHIGAN

Preston Reed Hubbell, D.O.
OSTEOPATHIC DIAGNOSIS & TREATMENT
Gastro Intestinal Diseases
504-505 Park Avenue Bldg.
Detroit 26, Michigan

MISSOURI

DR. COLLIN BROOKE
PROCTOLOGIST
Certified by A.O.B.P.
210 Frisco Building
906 Olive St.
St. Louis 1

KANSAS CITY
Dr. Dorland DeShong
General Osteopathic Practice
3737-39 Main Street
WEsport 0611

NEW MEXICO

J. Paul Reynolds, D.O.
Roswell Osteopathic Clinic and Hospital
401 N. Lea
Roswell, N. Mex.

GEO. C. WIDNEY, D.O.
SURGERY
GEO. C. WIDNEY, JR., D.O.
OBSTETRICS
The New Mexico Osteopathic Hospital
Albuquerque
1020 W. Central

NEW YORK

Dr. Thomas R. Thorburn
Dr. J. Marshall Hoag
HOTEL BUCKINGHAM
101 W. 57th Street
New York City

NEW YORK

MUNCIE INSTITUTE FOR HEARING
CURTIS H. MUNCIE, D.O., Sc.D.
515 PARK AVENUE CORNER 60th STREET NEW YORK CITY
OPPOSITE FORMER LOCATION, HOTEL DELMONICO
DEAFNESS AND CAUSES
MUNCIE RECONSTRUCTION METHOD
TELEPHONE VOLUNTEER 5-7555
CABLE ADDRESS MUNCIEHEAR, N. Y.

RATES PER INSERTION: $2.00 for 20 words or less. Additional words 10 cents each.
TERMS: Cash with order.
COPY: Must be received by 20th of preceding month.

FOR SALE: SINGER Surgical Stitcher: absolutely new—never sterilized. Complete prepaid to you, $50.00. Regular price $56.10. Dr. Wm. Bruner, Eunice, New Mexico.

BOOK NOTICES

(Continued from page 41)

TEXTBOOK OF GENERAL SURGERY. By Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine; Director of Surgical Service, Illinois Research and Educatonal Hospitals, Chicago; and Robert Elman, M.D., Associate Professor of Clinical Surgery, Washington University School of Medicine; Assistant Surgeon, Barnes Hospital; Associate Surgeon, St. Louis Children's Hospital; Director of Surgical Service, H. G. Phillips Hospital, St. Louis. Ed. 4. Cloth. Pp. 1118, with illustrations. Price $10.00. D. Appleton-Century Co., 35 W. 32nd St., New York City, 1944.

A score of authorities have collaborated to produce this excellent textbook. In the fourth edition of it, naturally, more emphasis than in former editions has been placed on the surgery of war and catastrophe. An additional chapter with such a title has been added. The new material in general has not increased the size of the book because condensation and elimination were used to make room for additional emphasis on fluid and electrolyte balance, amino-acid therapy, hypoproteinemia transfusions, chemotherapy and appendicitis.

PENNSYLVANIA

Dr. C. Haddon Soden
ANESTHESIA REDUCTION
Suite 711-12
12 South Twelfth St.
PHILADELPHIA, PA.

RHODE ISLAND

Dr. F. C. True
SURGEON
1763 Broad St.
PROVIDENCE, R. I.
CHIEF SURGEON
R. I. OSTEOPATHIC HOSPITAL

VIRGINIA

Vincent H. Ober
Bankers Trust Bldg.
NORFOLK, VIRGINIA
General Practice
Proctology—Varicose Veins Hernia
Clinical and X-Ray Laboratories

ENGLAND

Dr. Chas. W. Barber
General Osteopathic Practice
140, Park Lane,
London, W.1.
England.

CALIFORNIA

Drs. Edward B. Jones
and
Forest J. Grunigen
609 So. Grand Ave.
Los Angeles, Calif.
Practice Limited to
Urology—Dermatology—Proctology

LOS ANGELES
MERRILL SANITARIUM
Neuropsychiatric
Downtown Office
609 South Grand
Avenue

Complete Psychiatric Service
THOMAS J. MEYERS
M.A., D.O., F.A.C.N.
and
John L. Bolenbaugh,
D.O.
FULL facilities for the OSTEOPATHIC care of the insanities, addictions, neuroses, deficiencies, epilepsies, migraines and all other psychiatric problems.
234 E. Colorado St., Pasadena, Calif.

Lee R. Borg, D. O.
and
John B. Wessel, D.O.
PROCTOLOGY
HERNIA
1130 West Santa Barbara Ave.
Los Angeles, California
Axminster 7149

Dr. Cecil D. Underwood
Practice limited to
DERMATOLOGY
&
SYPHILOLOGY
416 West 8th Street
Los Angeles, California

COLORADO

DR. PHILIP A. WITT
Division of Urology and Surgery of the Rocky Mountain Clinic
1550 Lincoln **Denver**

CHANGES OF ADDRESS

(Continued from page 38)

Skeels, S. Mable, from 204 K of P Bldg., to 19-25 Giomi Bldg., Albuquerque, N. Mex.
Smith, Jack E., from Clarion, Pa., to 207 E. Fourth St., Emporium, Pa.
Smith, Gail G., from 402 W. Frisco, to Box 355, Dublin, Texas.
Spavins, Walter R., KCOS '43, Battle Creek Osteopathic Hospital, 614 Capital Ave., N.E., Battle Creek, Mich.
Staffa, Alfred H., from Flatonia, Texas, to 650 Mariposa St., Beaumont, Texas.
Stevens, Joseph E., from Nashville, Tenn., to APO 26, c/o Postmaster, Fort Jackson, S. C. (In Service).
Still, R. H., from Macon, Mo., to Kirksville, Mo.
Stillman, Carl S. Jr., from 527 Commonwealth Bldg., to 527 Orpheum Theatre Bldg., San Diego 1, Calif.
Stone, Fred H., from 1008 W. Sixth St., to 649 S. Olive, Room 508, Los Angeles 14, Calif.
Thompson, E. D., from 301 Myrick Bldg., to 2121 Broadway, Lubbock, Texas.
Thorp, John H., from 1020 to 810 Seaboard Bldg., Seattle 1, Wash.
Tibbles, L. D., from Box 96, to Box 467, Heppner, Oregon.
Todd, R. Mark, from Grand Rapids, Mich., to Osceola, Mo.
Todhunter, Melvin E., from Philadelphia, Pa., to First Natl. Bank Bldg., 102 Center St., Oil City, Pa.
Tompkins, G. R., from Marshall, Mo., to 1006 S. Liberty, Independence, Mo.
von Behren, F. F., Lt., from Fort Benning, Ga., to APO 98, c/o Postmaster, San Francisco, Calif. (In Service).
Von Wald, Vernon, Ph. M. 1/c, from Mare Island, Calif., to c/o Fleet Postoffice, San Francisco, Calif. (In Service)
Voss, John H., from 306 to 406 Hyd Bldg., Albert Lea, Minn.
Walker, W. J., from Gazette Bldg., to 15 Saviers Bldg., Reno, Nev.
Ward, Campbell A., from 4 Malcolm Theatre Bldg., to 51 Cass Ave., Mount Clemens, Mich.
Weissman, Sidney, from Los Angeles, Calif., to 3309 Beechmont Ave., Lynwood, Calif.
West, R. L., from Kansas City, Mo., to High Grove Road & 71 Highway, R.F.D. 1, Grandview, Mo.
White, J. Russell, from Detroit, Mich., to R.D. 2, Box 49, New Castle, Pa.
Williams, E. R., from Chicago, Ill., to Patriot, Ind.
Wintle, Keith A., from Joplin, Mo., to Kanab, Utah.
Wirt, G. Howard, from Colon, Mich., to 212 E. Maple St., Climax, Mich.
Wood, Hilton C., from Oklahoma City, Okla., to 214-15 Nichols Bldg., Chickasha, Okla.
Zauder, Gerard, DMS '44, Art Centre Hospital, 5435 Woodward Ave., Detroit 2, Mich.
Zuzga, John J., from Detroit 12, Mich., to Sebewaing, Mich.

DISTRICT OF COLUMBIA

DR. CHESTER D. SWOPE
Osteopathic Physician
The Farragut Apts.
Washington, D. C.

FLORIDA

WALTER W. MARKERT
OSTEOPATHIC PHYSICIAN
808 E. Las Olas Boulevard
Fort Lauderdale, Florida

Dr. George R. Norton
Dr. Joseph W. Norton
1518 East Las Olas Blvd.
Ft. Lauderdale, Florida

MASSACHUSETTS

VEITCH
AURIST
BOSTON

MICHIGAN

Arthur D. Becker, D.O.
Diagnosis, Cardiology
Referred Cases Only
1210 Peoples State Bldg.
Pontiac, Michigan

BET-U-LOL
HUXLEY PHARMACEUTICALS
521 FIFTH AVENUE, NEW YORK, N. Y.
The Ethical Topical Anodyne that Controls . . . PAIN *in muscle, nerve and joint inflammations*
CONTAINS CHLORAL HYDRATE • MENTHOL METHYL SALICYLATE

Occupational Wry-Neck

Is the title of

Osteopathic Health No. 7

AN ILLUSTRATED leaflet showing how a wry-neck may be acquired and how the osteopathic physician would go about treating it. Physical therapy measures and manipulative treatment are featured in this pictorial.

These undated, attractive little tracts may be distributed from the office, or mailed with your monthly statements, without extra charge for postage, or as a special mailing in unsealed envelopes, at one and one-half cents each.

Previous issues are still available, namely

No. 1—Osteopathic Care in Pneumonia
No. 2—Osteopathy in Heart Disturbances
No. 3—Low-Back Pain
No. 4—Contagious Diseases of Children
No. 5—Osteopathic Care of Peptic Ulcers
No. 6—Osteopathic Care of Women
No. 7—Occupational Wry-Neck

Orders may consist of assorted titles.
Price: $2.75 per 100.
Envelopes 25 cents per 100 extra.

OSTEOPATHIC MAGAZINE

Delivered in Bulk to Your Office

	Annual Contract	Single Order
Under 200 Copies	$6.50 per 100	$7.00 per 100
200 or more	5.50 per 100	6.00 per 100

Above rates do not include imprinting. See imprinting charges below.

Mailed direct to list—$1.50 per 100 extra without professional card; $2.50 per 100 extra with professional card. (Covers cost of addressing, inserting and postage only.)

IMPRINTING

50 cents per 100. Minimum charge 50 cents.

Shipping charges prepaid in United States and Canada. Mailing envelopes furnished free.

PLATE CHARGES

Original plate set-up on contract orders—free. Change in set-up—75 cents each time.

Original plate set-up on single orders — 75 cents. Change in set-up — 75 cents each time.

USE ORDER BLANK

American Osteopathic Association
540 N. Michigan Ave., Chicago, 11.

Please send the undersigned

.....Copies of Osteopathic Magazine, Month.....

.....With professional card.....Without professional card.

Name.....

Address.....

2 per cent for cash on orders of 500 or more.

Use This Order Blank

American Osteopathic Association
540 N. Michigan Ave., Chicago 11, Ill.

Please send_____copies of O. H. for

_____months beginning with No. 7; or

_____copies each of Nos._____

CHECK SERVICE WANTED

☐ Contract ☐ Single order
☐ With professional card ☐ Deliver in bulk
☐ Without professional card ☐ Mail to list

Name_____

St. and No._____

City_____ Zone_____ State_____

COPY FOR PROFESSIONAL CARD BELOW

Advertisers in This Issue

BOOKS AND PERIODICALS

American Osteopathic Association 8, 18, 24, 40, 44
D. Appleton Century Co. ..... Cover II
Davis, F. A., Co. 3
Lea & Febiger 25
Mosby, C. V., Company ..... Cover IV
Saunders, W. B., Company ..... Cover I

DIAGNOSTIC & THERAPEUTIC APPARATUS

Birtcher Corporation 13
Effervescent Produets, Inc. 31
Young, F. E., & Co. 32

DRUG PREPARATIONS

Alkalol Company 36
Anglo-French Labs, Inc. 27
Arlington Chemical Co. 26
Barnes, A. C., Company, Inc. 29
Bristol-Myers Co. 11
Cereal Lactic Co. 14
Ciba Pharmaceutical Products, Inc. 15
Dartell Laboratories 22
Doho Chemical Corp. 41
Effervescent Products, Inc. 31
Esscolloid Company 33
Huxley Pharmaceuticals, Inc. 43
Lavoris Chemical Co. 37
Leeming, Thos. & Co., Inc. 30, 38
Livingston Chemical Co. 41
Medicone Co. 36
Menley & James, Ltd. 34
Mycoloid Laboratories, Inc. 35
Numotizine, Inc. 8
Nutrition Research Labs. 16, 17
Ortho Products, Inc. 46
Physicians' Drug & Supply Company 25
Plough, Inc. 22, 25
Shield Laboratories 10
Smith, Martin H., Co. 41
Zymenol (Otis E. Glidden & Co., Inc.) 39

ENDOCRINE & VITAMIN PRODUCTS

Endocrine Food Co. 45
Harrower Laboratory, Inc. 26
Nutrition Research Labs. 16, 17
Professional Foods 20
Vitaminerals, Inc. 45
Zymenol (Otis E. Glidden & Co., Inc.) 39

FEMININE HYGIENE AND CONTRACEPTIVES

Diaphragm & Chemical Co. 37
Larré Laboratories, Inc. 37
Lehn & Fink Products Corp. 18
Schmid, Julius, Inc. 9

FOOD PRODUCTS

Cereal Institute 4
Chicago Dietetic Supply House, Inc. 41
Horlick's Malted Milk Corp. 19
Mellin's Food Company 20
Ralston Purina Co., Inc. 23
Wander Company 21

MISCELLANEOUS

American Can Co. 12
Camel Cigarettes 28
Classified Ads 42
Parker Herbex Corp. 22
Professional Cards 42, 43
U.S. Treasury War Bonds ..... Cover III

SUPPORTING GARMENTS

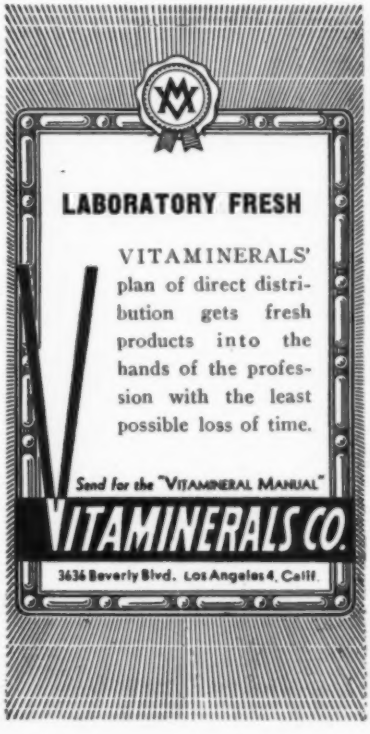
Camp, S. H., & Company 5
Spencer, Incorporated 7
Storm, Katherine L. 45

SURGICAL EQUIPMENT & SUPPLIES

Davis & Geck 8
Johnson & Johnson 1
Pelton & Crane Co. 6

HOW TO RECOGNIZE A GOOD SUPPORT FOR VISCEROPTOSIS

Occupancy pads, preferably wedge shape and made of built up layers of material, are often more comfortable than leather covered metal. Apply supporting pressure low down starting about ¾" above the pubic bone and extending high enough to lift the viscera but not so high as to constrict the upper abdomen. Avoid pressure or chafing over the pubic bone, iliac crests or spinal process by choosing a mesh or knitted rubberless material for a background. Allow for adjustment with traction towards the spine to assist the normal musculature. A proper lift is indicated when the patient shows a plumpness in the epigastrum when standing. Protect the inguinal regions against herniation due to concentration of impulse from cough or straining. Katherine L. Storm Supports, 1701 Diamond St., Philadelphia, 21, Pa., the doctor's favorite source for physiological supports will send literature if you mention the Journal of A.O.A. Adv.


LABORATORY FRESH
VITAMINERALS' plan of direct distribution gets fresh products into the hands of the profession with the least possible loss of time.
Send for the "VITAMINERAL MANUAL"
VITAMINERALS CO.
3636 Beverly Blvd. Los Angeles 4, Calif.

INCLUDE THE O. H. WITH YOUR MONTHLY STATEMENTS

Advantages: It is smaller—Reading is condensed—Only one subject discussed — More pictures — Easier and quicker to read — Costs less.

Mail them with your montthly statements, without extra charge for postage, or as a special mailing in unsealed envelopes, at one and one-half cents each.

Standardized —
ESTROGENIC HORMONES • VITAMINS • LIVER EXTRACT, U.S.P.
ENDOCRINE *Food Company* - UNION CITY, N.J.

when the Burden of Maternity is Prohibitive

Particularly for most women who have contracted heart disease in the earlier years of life, the presence of myocardial pathology, valvular damage, or auricular fibrillation may seriously impair the ability to withstand the extra circulatory burden of pregnancy and labor.

Whenever evidence or history of decompensation, or inadequate cardiac reserve, suggests the expedience of controlling conception, Ortho-Gynol Vaginal Jelly may be prescribed with complete confidence in its reliability and safety. Instantly spermicidal and readily miscible, it is truly effective and may be used over extended periods without fear of irritation. Ease of application and aesthetic acceptability commend it to meticulous patients.

ACCEPTED AMERICAN MEDICAL ASSN.

ortho-gynol
VAGINAL JELLY

Active ingredients: ricinoleic acid, boric acid, oxyquinoline sulfate.

©Ortho Products, Inc., Linden, N. J.

He won't dodge this-

Don't *you* dodge this!

The kid'll be right there when his C. O. finally gives the signal . . .

There'll be no time to think of better things to do with his life. THE KID'S IN IT FOR KEEPS—giving all he's got, *now!*

We've got to do the same. This is the time for us to throw in everything *we've* got.

This is the time to dig out that *extra* hundred bucks and spend it for Invasion Bonds.

Or make it $200. Or $1000. Or $1,000,000 if you can. There's no ceiling on this one!

The 5th War Loan is the biggest, the most vitally important financial effort of this whole War!

5TH WAR LOAN

Back the Attack! - BUY MORE THAN BEFORE

AMERICAN OSTEOPATHIC ASSOCIATION

This is an official U. S. Treasury advertisement—prepared under the auspices of Treasury Department and War Advertising Council

Now Available!

MEAKIN'S NEW 4th EDITION
PRACTICE OF MEDICINE

CONTENTS

Introduction to Practice of Medicine.
Diseases of Nasopharynx and Mouth.
Specific Infections of Nasopharynx and Mouth.
Diseases of Larynx and Bronchial System.
Diseases of Lungs (2 Chapters).
Diseases of Circulatory System.
Diseases of Serous Membranes, Mediastinum and Diaphragm
Diseases of Hematopoietic System.
Diseases of Gastrointestinal Tract.
Diseases of Liver and Bile Passages.
Diseases of Nutrition.
Diseases of Metabolism.
Diseases of Ductless Glands.
Diseases of Nervous System.
Diseases of Locomotor System.
Diseases of Urinary System.
Infectious Diseases Conveyed by Parenteral Inoculation.
Diseases Due to Allergy.
Diseases Due to Abnormal Environments.
Diseases Due to Chemicals and Drugs.

NEW FEATURES

Use of Sulfa Drugs and Penicillin
Bacterial Effects — Solubility and Absorption
Acetylation — Distribution
Toxic Effects — Indications for Therapy
Methods of Administration and Dosage
Contraindications

•

Prevention of Malaria

•

Atypical (virus) Pneumonia

•

Neuro-Circulatory Asthenia

•

Wartime Syndromes
Crush Syndrome — Immersion Foot
Hepatorenal Syndrome — Blast Injuries
Jaundice Following Administration of Human Serum
Epidemic Hepatitis

•

Re-emphasis of Preventive Medicine and the Part Which Diet, Work, Housing, etc., Play in Health

•

Further Discussion of the Concept of Psychosomatic Processes, i. e., Headache, Backache, Functional Dyspepsia

By JONATHAN CAMPBELL MEAKINS, M. D., LL. D., Professor of Medicine, McGill University, Physician-in-Chief Royal Victoria Hospital, Montreal. FOURTH EDITION. 1450 pages, 517 illustrations; 48 color plates. PRICE $10.00.

The C. V. Mosby Company
3525 Pine Boulevard
St. Louis 3, Missouri

AOA 7-44

Gentlemen: Send me Meakins' New Fourth Edition
PRACTICE OF MEDICINE
The price is $10.00

☐ Attached is my check. ☐ Charge my account.

Dr.....

Address.....